A drone strategy 2.0 for a smart and sustainable unmanned aircraft eco-system in Europe

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A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe

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On 29 November 2022, the European Commission published its long-awaited 'Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe'. This document builds upon previous European Union (EU) initiatives such as the 'An Aviation Strategy for Europe', 'European Green Deal', 'Sustainable and Smart Mobility Strategy - Putting European Transport on Track for the Future' and the numerous European Union Aviation Safety Agency drone-related publications. The Drone Strategy 2.0 constitutes the Commission's vision for developing the drone sector and provides the foundations for the next steps at the EU level to develop a thriving, viable drone ecosystem in the EU. This article gives a clear overview of the Strategy's main goals, its strengths and weaknesses, and assesses whether it is sufficient. It presents the evolutionary path from the Drone Strategy 1.0 and Drones Leaders' Group Report, to the Drone Strategy 2.0, with a parallel assessment of the challenges presented in these documents. The article argues the Strategy is a positive political initiative and that more efforts in the legal field should be taken for the goals set to be achieved. Finally, the article underlines the EU's shift from an initial safety-based approach to geopolitical protectionism, which is evident throughout the Strategy and this shift's significance for the future of drones in the EU.

Keywords: Aviation Safety, Civil-Military Synergies, Drones, Drone Strategy, European Commission, Funding and Research, Unmanned Aircraft Systems

1 INTRODUCTION

The significance of unmanned aircraft, or as they are commonly referred to 'drones',[1] in particular, has been evident since the early evolutionary phases of aviation. Article 8 of the Convention on International Civil Aviation 1944,[2]

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1 The term 'drone', as the Drone Strategy 2.0 emphasises, is the layman term for 'Unmanned Aircraft Systems', which means an unmanned aircraft and the equipment to control it remotely. Throughout the article, this term will be used as an equal and a synonym of the term 'UAS'. As the above constitutes the view of the EU Commission, the authors will adopt it for consistency purposes.

2 Convention on International Civil Aviation 1944, 7 Dec. 1944, 15 U.N.T.S. 295 (1944) (Chicago Convention).

Scott, Benjamyn I. & Andritsos, Konstantinos I. 'A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe'. *Air & Space Law* 48, no. 3 (2023): 273–296.

hereafter referred to as the Chicago Convention 1944, clearly portrays the provision of the 'pilotless aircraft' in the aftermath of World War II. However, during the 78 years since the birth of the Chicago Convention, advancements in engineering, electronics and Artificial Intelligence has pushed the boundaries of what drones are capable of, making their use widespread for both civil and military applications, as well as for both professional and recreational purposes.

New drone-related technologies and use cases have spread in the European Union (EU) Member States, changing the nature of many professions, while adding new elements to sectors that traditional aviation had little involvement in, like, e.g., agriculture, urban delivery of goods and urban surveillance. These new technologies have, however, brought several legal, societal acceptance and technical challenges that need to be addressed for the safe, secure and sustainable incorporation of unmanned aircraft systems (UAS) in the single European sky (SES).

The EU has played a crucial role in developing a comprehensive and original drone safety regulatory regime for its 27 Member States,[3] safely leading to the step-by-step evolution of the drone sector. The development of the aforementioned sector constitutes a primary goal for the EU since its objective to become carbon-neutral by 2050 and to digitalise its economy depends, in part, on the evolution of its transport sector.[4] The purpose mentioned above led the EU to adopt the new Basic Regulation[5] in 2018, which sets the common rules for aviation safety and established the European Union Aviation Safety Agency (EASA), under which all UAS operations must follow the EU's civil safety rules under SES. Based on the risk-based operation-centric approach of the Basic Regulation, the Commission adopted a new set of rules in 2019[6] that regulated drone operations and placing them on 'the market'.[7] Furthermore, the Commission adopted three *Implementing*

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[3] This also includes the European Economic Area (EEA) (Iceland, Lichtenstein and Norway) and Switzerland.

[4] *See* European Commission, *Report of the Drone Leaders' Group in Support of the Preparation of 'A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe'* 3 (2022), (https://transport.ec.europa.eu/system/files/2022-05/Drone_Leaders_Group_Report_2022-04-26.pdf) (accessed 4 May 2023).

[5] Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 Jul. 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91, OJ L 212, 22 Aug. 2018, at 1–122.

[6] Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the Rules and Procedures for the Operation of Unmanned Aircraft, OJL 152, 11 Jun. 2019, at 45–71; Commission Delegated Regulation (EU) 2019/945 of 12 Mar. 2019 on Unmanned Aircraft Systems and on Third-Country Operators of Unmanned Aircraft Systems, OJL 152, 11 Jun. 2019, at 1–40.

[7] *See* Rita Sousa Uva & Gerli Rebane, *EASA Regulations and the Operation of Unmanned Aircraft: An Overview*, in *The Law of Unmanned Aircraft Systems* 79–92 (Benjamyn I. Scott ed., 2d ed., Wolters Kluwer 2022).

Regulations on U-space[8] in 2020,[9] which create the air traffic management system for drones in the EU, thus forming the regulatory chain, which will be expanded in the future, creating a safer and more efficient drone ecosystem within the EU.

In this context, the European Commission, through DG MOVE (Directorate-General for Mobility and Transport), planned to set new policy guidelines to steer its work beyond safety-based regulations and plan its next steps. That led to the EU Commission launching a study aiming to develop a new strategy that will portray the views of the EU administration. This process was finalised in November 2022 with the publication of the Drone Strategy 2.0. Consequently, this paper will examine this new document, a product of the accumulation of views of public and private EU institutions and organisations.

This article is structured in 5 parts. It analyses the steps that led to Strategy 2.0 and its main points (Part 2); it presents the questions that arose during Drone Leaders' Group and if those were addressed in Strategy 2.0 (Part 3); assesses the issues presented in the said document and the proposed solutions by the Commission (Part 4); and finally, the article offers some ideas on the Strategy's potential gaps about its predecessor and other past policy documents.

2 BEFORE 2.0, WHAT? THE PREPARATORY STEPS OF THE RECENT DRONE STRATEGY AND THE EU COMMISSION'S VISION

2.1 On the road to Drone Strategy 2.0

The Drone Strategy 2.0, as its name implies, constitutes the new version of the EU Commission vis-à-vis the EU drone sector. However, a significant evolutionary process preceded this document. The beginning of this effort commenced with the first version of Drone Strategy, which back in 2014 was titled: 'A New Era for Aviation: Opening the Aviation Market to the Civil Use of Remotely Piloted Aircraft Systems in a Safe and Sustainable Manner'.[10] This document was an abstract and premature version of the EU's vision of UAS. In 2015, the

[8] Commission Implementing Regulation (EU) 2021/664 of 22 Apr. 2021 on a Regulatory Framework for the U-space, OJL 139, 23 Apr. 2021, at 161–183; Commission Implementing Regulation (EU) 2021/665 of 22 Apr. 2021 amending Implementing Regulation (EU) 2017/373 as Regards Requirements for Providers of Air Traffic Management/Air Navigation Services and Other Air Traffic Management Network Functions in the U-space Airspace Designated in Controlled Airspace, OJL 139, 23 Apr. 2021, at 184–186; Commission Implementing Regulation (EU) 2021/666 of 22 Apr. 2021 Amending Regulation (EU) No 923/2012 as Regards Requirements for Manned Aviation Operating in U-space Airspace, OJL 139, 23 Apr. 2021, at 187–188.

[9] *See* Mikko T. Huttunen, *U-space: European Union's Concept of UAS Traffic Management*, in *The Law of Unmanned Aircraft Systems* 97–109 (Benjamyn I. Scott ed., 2d ed., Wolters Kluwer 2022).

[10] *See* European Commission, *A New Era for Aviation: Opening the Aviation Market to the Civil Use of Remotely Piloted Aircraft Systems in a Safe and Sustainable Manner*, COM(2014) 207 final.

Commission issued 'An Aviation Strategy for Europe' as an expansion and more analytical approach to the 2014 document.[11] Furthermore in the same year, on 6 March, a coalition of private organisations, institutions, stakeholders associated with the drone industry and the EU administration gathered in Riga, issuing the first Declaration 'ON REMOTELY PILOTED AIRCRAFT (Drones) "FRAMING THE FUTURE OF AVIATION"'.[12] The aforementioned document presented the ways forward for the EU aviation community, in the form of guiding principles. Riga Declaration was the first of the 4 total Declarations that followed until 2018. Its subsequent documents were:

- Warsaw Declaration in 2016,[13]
- Helsinki Declaration in 2017[14] and
- Amsterdam Declaration in 2018.[15]

These documents are similar to the Riga Declaration as they constitute guiding principles that contributed to the shaping of the EU drone regulations. The first EU regulatory work on drones was the product of constructive cooperation between the EU aviation community, and the result of the first Strategy and the 4 Declarations; the EASA Basic Regulation (EU) 2018/1139. This created the legal basis for the EU to create safety-based rules for all categories of drones, therefore, providing a legal basis for Regulation 2019/945 and Regulation 2019/947, as well as for the EU Regulatory Framework for U-space per Regulation 2021/664, which is the EU concept for Unmanned Aircraft Systems Traffic Management (UTM). Thus, it is evident that EU Commission and EASA worked extensively in the area of the transport sector regulatory modernisation and particularly drones. Apart from improving the modernisation of intra-EU mobility solutions, the above initiatives were also developed to achieve the dual goal of the green[16] and digital transition.[17] Apart from the regulatory work, the EU Commission set the stage for a unified vision vis-a-vis unmanned aviation and manned electric Vertical Take-Off and Landing (eVTOL) aircraft[18] in its previous

[11] *See* European Commission, *An Aviation Strategy for Europe*, COM(2015) 598 final.
[12] *See* Riga Declaration on Remotely Piloted Aircraft (Drones), *Framing the Future of Aviation* (Riga 6 Mar. 2015).
[13] *See* Warsaw Declaration, *Drones as a Leverage for Jobs and New Business Opportunities* (Warsaw 24 Nov. 2016).
[14] *See* Helsinki Declaration, *Seizing Digital Technologies to Deliver Advanced Drone Operations Safely and Securely* (Helsinki 22 Nov. 2017).
[15] *See* Drones Amsterdam Declaration (Amsterdam 28 Nov. 2018).
[16] European Commission, *The European Green Deal*, COM(2019) 640 final.
[17] *See* European Commission, *A Europe Fit for the Digital Age Empowering People With a New Generation of Technologies,* https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en (accessed 4 May 2023).
[18] According to the *'Drone Strategy 2.0'*, 'electric Vertical Take Off and Landing' aircraft (eVTOL) are used for the transport of people and cargo initially with a pilot on board controlling the flight, in the

works, such as the Commission's Sustainable and Smart Mobility Strategy (SSMS)[19] and the Zero Pollution Action Plan.[20] The aforementioned projects are part of the same policy, aiming to lead the EU transport sector towards a smarter, more holistic and sustainable future. One of the actions featured in SSMS was the announcement of the Drone Strategy 2.0, which would contribute to the materialisation of the goals set there and, additionally, to the 'Action Plan on Synergies between Civil, Defence and Space Industries',[21] which also includes an 'EU Drones Technologies Flagship' project.[22]

The initiatives mentioned above clarify the intention of the EU *to create a UAS services market* that will be technologically advanced and capable of serving the constant increase of companies and operations volume, especially in urban environments.[23] It is also evident that all these projects somehow overlap, creating a plexus of many different actions that have as a second objective the strengthening of the EU's civil, security and defence industry potential and synergies.[24] This duality (civil-military application of drones) is evident throughout the Drone Strategy 2.0, featuring the current vision of the EU administration about the further development of the EU drone market.

Before the actual publishing of the Strategy by the European Commission, an extensive organisational and planning procedure took place starting in June 2021 (the launching month of the study). The Roadmap was published in July 2021,[25] with consultations occurring parallel between the Commission Inter-Service Steering Group and the Informal Drone Experts Group. From October 2021 to January 2022, public and targeted consultations took place, with the subsequent results of the study becoming available in June 2022. Ultimately, the Drone Strategy 2.0 was communicated to the public in November 2022.

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future, they will have the ability to fly autonomously using the latest technologies when regulations allow. To that end, the upcoming EU Regulations on the 'Certified' drone category are expected around 2025.

19 European Commission, *Sustainable and Smart Mobility Strategy – Putting European Transport on Track for the Future*, COM(2020) 789 final.

20 European Commission, *EU Action Plan: Towards Zero Pollution for Air, Water and Soil*, COM(2021) 400 final.

21 European Commission, *Action Plan on Synergies Between Civil, Defence and Space Industries*, COM(2021) 70 final. The Action Plan includes a 'Drone Technology' flagship project on 15–16.

22 European Commission, *supra* n. 4, at 3.

23 European Commission, *A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe*, COM(2022) 652 final, at 6.

24 *Ibid*.

25 *See* European Commission(2022), *A Drone Strategy 2.0 for Europe to Foster Sustainable and Smart Mobility*, https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13046-A-Drone-strategy-20-for-Europe-to-foster-sustainable-and-smart-mobility_en (accessed 4 May 2023).

2.2 The EU commission's vision

One important element that catches the eye when reading the Strategy is its name. While this document is referring to 'drones', its content, however, addresses multiple issues from Innovative Aerial Services (IAS)[26] to Urban Air Mobility (UAM),[27] and many relevant matters. Thus, it is evident that the scope of application of this roadmap is actually broader and does not solely emphasise drones. Digging further into the Strategy, something interesting is found. Even before the analysis of the Commission's vision, the proposed segregation of the civil UAS service market in the EU was presented. For the EU, overlapping parts constitute the aforementioned market: the Innovative Aerial Services,[28] constituted by 'Aerial Operations' and Innovative Air Mobility,[29] which covers international, regional and UAM,[30] and U-space operations.[31] This verbal partitioning of the EU airspace and the reference to the word 'regional' presents the Commission's perception of the form that it is going to have in the near future. The introduction of the regional airspace concept in contrast to the national airspace provision set in the Chicago Convention is one ground-breaking element of the Strategy. It is crucial to clarify that this concept of regional airspace is not associated with the EU's Functional Blocks of Airspace (FAB), which was an attempt to divide the airspace into specific regions for air traffic management purposes.

Finances-wise, the Commission speculates that this emerging drone market will have a significant impact on the economies of the EU, reaching a value of EUR14.5 billion by 2030.[32] Thus, it is clear that the successful incorporation of drones at a large scale plays an extremely important role in EU policy-making.

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[26] *See* EASA, Notice of Proposed Amendment 2022-06, 'Introduction of a Regulatory Framework for the Operation of Drones: Enabling Innovative Air Mobility With Manned VTOL-Capable Aircraft, The Initial Airworthiness Of Unmanned Aircraft Systems Subject to Certification, and the Continuing Airworthiness of those Unmanned Aircraft Systems Operated in the "Specific" Category', at 19.

[27] *See* Konstantinos I. Andritsos, Benjamyn I. Scott & Andrea Trimarchi, *What Is in a Name: Defining Key Terms in Urban Air Mobility*, 105 J. Intelligent & Robotic Sys. 1–9, at 7 (2022), doi: 10.1007/s10846-022-01694-1.

[28] EASA defines 'IAS' in NPA 2022-06 at 18 as the 'the set of operations and/or services enabled by the new airborne technologies – the operations and/or services include both the transportation of passengers and/or cargo and aerial operations (e.g., surveillance, inspections, mapping, telecommunication networking)'.

[29] According to Drone Strategy 2.0, 'IAM describes a diverse array of aircraft types (such as manned and unmanned), whose designs are enabled by ongoing innovations particularly in the areas of hybrid and electrification of propulsion systems, energy storage, lightweight materials, digitalisation and automation. These innovations have made possible an array of novel designs spanning multi-rotor, tilt wing, tilt-rotor, powered wing, offering short take-off and landing (STOL) through to VTOL capabilities'.

[30] *See* Konstantinos I. Andritsos & Vassilis Agouridas, *Urban Air Mobility: Legal and Societal Stakes of an Upcoming Mobility Network*, in *The Law of Unmanned Aircraft Systems* 310–311 (Benjamyn I. Scott ed., 2d ed., Wolters Kluwer 2022).

[31] *Ibid.*, at 315.

[32] *See* European Commission, *supra* n. 4, at 4.

In order for the above plan to materialise, the Commission presents *its clear vision* of the drone ecosystem in 7 different but overlapping points:

- *Societal acceptance* of large, at-scale drone usage is underlined in the first point, showing the catalytic significance of positive public opinion in this new era of transportation.[33]
- *The integration of IAM services* in the conventional transportation ecosystem, thus setting the foundation for creating the future urban multimodal intelligent mobility ecosystem with its relevant ground infrastructure.[34]
- *The role of EASA* is emphasised as the guarantor of establishing and maintaining a high uniform level of civil aviation safety in the EU.[35]
- *The role of the U-space framework* is underlined. The new EU framework aims to support and manage manned and unmanned traffic integration in the same airspace in a safe, secure and environmentally friendly manner.[36]
- The following point presents *the evolution through innovation doctrine* prevalent in the Drone Strategy 2.0. The Commission states that the EU drone industry's growth is a prerequisite for its success in the EU via its widespread accessibility and collaboration between all possible stakeholders.[37]
- One of the most critical points of the Strategy is the penultimate one, where *the importance of the civil-defence industry synergies* is emphasised.[38] The illegal invasion of Ukraine by Russia has accelerated the need for EU independence and evolution in the drone defence sector. The above is prevalent throughout the Strategy as the Commission seems to believe that the success of drones intra-EU passes through both civil and military sectors.
- The last point of the Commission's vision refers again to the financial sector, as it is stated that the upcoming drone ecosystem will *contribute to the EU's economic and geopolitical growth and sustainability*.[39]

It is evident from the above that the Commission's vision is not purely safety oriented, thus differentiating from this current trend in the ongoing rule-making activities.[40] The EU administration managed to create a well-rounded set of goals

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33 *See* Andritsos & Agouridas, *supra* n. 30, at 316–318.
34 *See* European Commission, *supra* n. 4, at 5.
35 *Ibid.*
36 *Ibid.*
37 *Ibid.*
38 *Ibid.*, at 5–6.
39 *Ibid.*, at 6.
40 *See* EASA, *European Plan for Aviation Safety (EPAS) 2023-2025*, https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2023-2025(accessed 4 May 2023).

covering all necessary sectors ranging from societal acceptance and contribution of drones to the economic growth of the EU to the importance of EASA's role, U-space, integration of IAM and civil-military defence sectors' cooperation. All of the above exist under the prism of the evolution of the EU mobility environments through innovation. The term 'drones' is used in the Strategy on purpose, to surround all categories of UAS operating or will operate in the EU in the future, the Open operation category links to UTM, the Specific category links to Standard Scenarios, and the Certified category links to Vertiports and Flight Rules.

Before advancing to the proposed materialisation instruments of the vision above, it is crucial to evaluate how the stakeholders in the drone sector envisioned the recent Strategy.

3 THE VIEW OF THE STAKEHOLDERS, THE REPORT OF THE DRONE LEADERS' GROUP 2022

The Report of the Drone Leaders' Group of 2022[41] is a document drafted by key stakeholders[42] involved in the EU drone industry. This Report precedes the Strategy and presents a holistic approach that attempts to cover all the aspects of the then-upcoming drone policy, providing suggestions simultaneously. The Report reflects the outcome of all the discussions the Group participated in during the drafting phase of the Drone Strategy 2.0.[43]

Before proceeding to the analysis of this document, a critical comment on the aforementioned Stakeholders' involvement is crucial. While the invitation of Stakeholders from rather different backgrounds from the Commission was a positive step, in the end, following the past norms, the Commission engaged only with the aviation-oriented stakeholders. This indirect exclusion of important non-aviation actors creates a rift in the goals set by the EU administration, making their materialisation more complicated. Additionally, as mentioned above, the role

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41 *See* European Commission, *supra* n. 4.

42 According to the Commission's Staff Working Document, twelve stakeholder groups were involved in the drafting phase of the Strategy, through interviews (scoping, targeted), survey, stakeholder meetings and Open Public Consultation performed by an external contractor. The involved stakeholders were national and regional authorities; European institutions and relevant agencies; military and law enforcement organisations; commercial and non-commercial operators; drone operators, service providers and users; airport operators and air navigation service providers; U-space providers; manufacturing industry; inter-governmental organisations and networks; non-governmental organisations; research facilities and academia; and citizens. In addition to the above, the Members of the Informal Drone Experts Group were invited to provide their views on UAM/U-space matters, enhancement of UAS services including the Small and Medium-Sized Enterprises dimension and development of Military/Civil synergies in the EU. European Commission, *EU Drone Sector State of Play, Accompanying the Document, 'A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe'*, SWD(2022) 366 final.

43 *See* European Commission, *supra* n. 25, at 23.

of the Informal Drone Experts Group should be emphasised.[44] Apart from its general contribution to the development of the Report of the Drone Leaders' Group, and indirectly to the Drone Strategy 2.0, it contributed to two main points:

- lobbying the Commission to engage in a broader discussion about the drones involving potential synergies that matured in the end document; and
- proving that the Drones Strategy 2.0 is another forum for aviation Stakeholders and not wider involvement.

Dissecting this lengthy Report, the view of the industry can be found, in reference to the present obstacles for a viable EU drone policy and the suggested remedies. According to the document above, the main barriers that the drone industry and the associated projects, e.g., UAM, IAS, and IAM in the EU, face fall under the spectrum of:

- funding and research,
- societal embracement and
- fragmented UAM approach.[45]

To address the above problematics, the Group suggested a multilayer approach as described below.

The view that drones are part of the aviation culture but simultaneously something more is emphasised in the text.[46] The Report suggests that the Strategy should have a broad scope, looking at the issues that are not aviation-oriented such as the citizens, safety, visual and noise pollution, inclusion, affordability, lifecycle assessment, sustainability and privacy. Drones should be treated as an instrument of a more significant project, complementing the other means of conventional mobility.[47]

The resonance of a wide array of Stakeholders from different domains is vital. Both civil and defence stakeholders should enter a thorough discussion with the EU at the centre of the debate. The above will ensure interoperability between them, especially in areas like Air Traffic Management (ATM) and UTM.[48]

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[44] *See* European Commission, *Informal Expert Group on Drones*, https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=41934&fromExpertGroups=true (accessed 4 May 2023).

[45] *See* European Commission, *supra* n. 25, at 9.

[46] *See* AeroSpace and Defence Industries Association of Europe and European Helicopter Association, *Positioning Helicopters in the Urban Air Mobility Ecosystem*, https://www.asd-europe.org/sites/default/files/2022-08/Positioning%20Rotorcraft%20in%20the%20UAM%20Ecosystem%20final%20signed.pdf (accessed 4 May 2023).

[47] *See* European Commission, *supra* n. 25, at 9.

[48] *Ibid.*, at 13.

The societal acceptance[49] aspect is also emphasised in the text as a prerequisite for the successful integration of drones at a large scale in the lives of EU citizens. The above element is a major one and can guarantee the success of the new proposed UAM ecosystems in the EU since, without earning the favour of the public, ambitious projects like that are doomed to fail.[50]

Since the potential success of the Strategy is largely based on the synergies with other EU activities and policies, projects like the Green Deal, the Sustainable and Smart Mobility Strategy, and Synergies Action Plan should be developed in coordination with the Strategy, with the EU identifying the relevant synergies.[51]

Another interesting suggestion is the removal of silos. To be more precise, it is the Group's view that civil technologies can be introduced for defence, too, e.g., last-mile troop deployment and 4D activities (dirty, dull, dangerous and difficult) and security (e.g., police and border surveillance) applications. Additionally, the same can be applied vice-versa, where defence funds, relevant research and experience earned during conflicts can accelerate the evolution of technology and then be incorporated into the civil sector.[52]

The building on past works of the EU seems crucial for the Group. The above suggestion is based on the fact that there has been extensive work on drones intra-EU, e.g., the UAS and UTM Regulations; thus, every upcoming work should use the existing one as a basis. However, it should be clear that these Regulations are just the initial steps and improvement will be required in due course due to the technological advancements and lessons learned. Furthermore, the Strategy must recognise that the Regulations are not the sole method of supporting a broad drone ecosystem.[53]

Finally, the Strategy needs a provision for stand-alone mobility-driven UAM funding. Creating a UAM research and funding programme to support the development of relevant ecosystems in the EU and coordination with existing opportunities is essential. Developing technology innovations at strategic and tactical levels, such as aligning with the Horizon Europe Joint Undertakings. For example, this includes the objectives of Clean Sky 3 in terms of CO_2 and noise emissions to safeguard EU competitiveness worldwide and SESAR-JU for UTM/ATM matters.[54] Furthermore, a link needs to be established between the proposed mobility-driven UAM funding and the non-aviation Joint Undertakings to

[49] *See* EASA, *Study on the Societal Acceptance of Urban Air Mobility in Europe* (19 May 2021).
[50] *See* European Commission, *supra* n. 25, at 20–22.
[51] *Ibid.*, at 14–15.
[52] *Ibid.*, at 15.
[53] *Ibid.*, at 16–18.
[54] *Ibid.*, at 15.

maximise the projects' efficiency. Joint Undertakings of significant relevance with the proposed UAM research and funding programme could be the:

- the Circular Bio-based Europe Joint Undertaking;
- the Clean Hydrogen Joint Undertaking;
- Europe's Rail Joint Undertaking;
- the Global Health EDCTP3 Joint Undertaking;
- the Innovative Health Initiative Joint Undertaking;
- the Key Digital Technologies Joint Undertaking; and
- the Smart Networks and Services Joint Undertaking.[55]

While the EU rules do not mandate cooperation between Joint Undertakings, it is encouraged, as it is stipulated in Article 2(5)(b) EU of Council Regulation (EU) No 2021/2085.[56] The Commission should use the above provision, wiring all the relevant JUs together and aiding the proper intra-EU drone development.

The above points, which are not directly connected to safety but are safety-related, presented in the Drone Leaders' Group Report create a plexus of expectations from the Drone Strategy 2.0. In parallel, the Report presents the views of the industry, private entities and organisations vis-a-vis which path the drone policies in the EU should take. The question that arises here is whether or not these expectations were fulfilled in the recent Drone Strategy 2.0. The core of the current EU drone services market policy will be assessed in the next paragraph as its 19 Flagship Actions.

4 THE 19 FLAGSHIPS IN THE EU DRONE POLICY ARMADA. DOES THE NEW STRATEGY LIVE UP TO THE HYPE?

Towards building the new EU drone services market, the EU Commission adopted 19 Flagship actions to materialise its vision, as this was analysed in section 2 of the article. In the Drone Strategy 2.0, the EU Commission divides the Flagships adopted into two categories:

(1) those that aim to build the European drone services market further and
(2) those that aim to strengthen the European drone civil, security and defence industry capabilities and synergies.[57]

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[55] *See* Benjamyn I. Scott, *Horizon Europe: The Next Multiannual Framework Programme* 5–6 (6 Feb. 2023), https://www.aisdue.eu/en/benjamyn-i-scott-horizon-europe-the-next-multiannual-framework-programme/ (accessed 4 May 2023).

[56] *See* Council Regulation (EU) No 2021/2085 of 19 Nov. 2021 Establishing the Joint Undertakings Under Horizon Europe and Repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014, OJ L 427, 30 Nov. 2021, at 17–119.

[57] *See* European Commission, *supra* n. 4, at 23.

In this paper, the Flagships will be divided into 4 subcategories:

- Safety
- Synergies
- Research and Funding
- Others

in reference to their respective nature.

4.1 Safety-oriented measures

The adoption of amendments to the Standardised European Rules of the Air (SERA)[58] and the Traffic Management/Air Navigation Services Regulation to safely integrate drone and piloted eVTOL operations is needed.[59] The integration of drones into the existing airspace in large numbers poses significant collision risks. To mitigate the above problem that could halt this emerging market, the EU is revising the existing aviation safety rules and developing entirely new rules tailored to the unique demands of the UAS.[60]

An analogous need exists in the adoption of new European Standard Scenarios for low to medium-risk aerial operations.[61] During the Drone Strategy consultation process, the Commission received concerns from some industry stakeholders regarding the requirements for granting operational authorisations.[62] Following these concerns, the requirements in some instances for an operational authorisation might be disproportionate to address the risks under both an operational and a financial aspect.[63] The claim mentioned above can also apply to real-world testing and demonstration of aerial operations. The above leads to the significant risk of categorising the operation performed under the 'Certified' category instead of the 'Specific' one by the competent authority, once the risk assessment has been performed, thus requiring the relevant certification of the aircraft, the operators and the remote pilot.[64] To remedy this issue, the Commission intends to review the situations like the one described above in synergy with the EASA and the

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58 *See* Commission Implementing Regulation (EU) No 923/2012 of 26 Sep. 2012 Laying Down the Common Rules of the Air and Operational Provisions Regarding Services and Procedures in Air Navigation and Amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010, OJL 281, 13 Oct. 2012, at 231–296.

59 *See* European Commission, *supra* n. 4, at 6.

60 *Ibid*.

61 *See supra* n. 6 as amended.

62 *See* European Commission, *supra* n. 4, at 9.

63 *Ibid*.

64 *Ibid*.

Member States, and for EASA to resume the development of Acceptable Means of Compliance (AMC) and Guidance Materials (GM) in the 'Specific' category.[65]

Adoption of rules for the 'Certified' category of drone operations, addressing the initial and continued airworthiness of drones subject to certification and the operational requirements applicable to manned VTOL-capable aircraft is deemed important.[66] While the emergence of rules on the 'Open' and 'Specific' UAS categories undoubtedly set a regulatory pathway in the EU, the absence of rules for the 'Certified' category, as it was hinted above, creates a plethora of issues. That regulatory gap the EU Commission, with the support of all the relevant competent authorities, plans to cover in the near future where Type 3, Type 2 and then Type 1 Certified category operations will get incorporated in the upcoming EU regulation.[67]

The adoption of rules for the design and operations of vertiports under the scope of the EASA regulation is crucial.[68] While EASA published the Prototype Technical Design Specifications for Vertiports last May,[69] the regulatory gap still exists in the EU.[70] Thus, the Commission aims to develop the associated regulatory framework for certifying vertiports and other relevant infrastructure in the near future.[71] Interestingly, these Specifications are not part of an EU Regulation; thus, they do not constitute obligatory standards which is similar to those issued by

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65 *Ibid*.

66 Commission Regulation (EU) No 748/2012 of 3 Aug. 2012 Laying Down Implementing Rules for the Airworthiness and Environmental Certification of Aircraft and Related Products, Parts and Appliances, as well as for the Certification of Design and Production Organisations, OJL 224, 21 Aug. 2012, at 1–85; Commission Delegated Regulation (EU) 2019/945; Commission Implementing Regulation (EU) 2019/947; Commission Regulation (EU) No 965/2012 of 5 Oct. 2012 Laying Down Technical Requirements and Administrative Procedures Related to Air Operations Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, OJ L 296, 25 Oct. 2012, at 1–148; Commission Regulation (EU) No 965/2012 of 5 Oct. 2012 Laying Down Technical Requirements and Administrative Procedures Related to Air Operations Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, OJL 296, 25 Oct. 2012, at 1–148; and Commission Implementing Regulation (EU) No 923/2012 of 26 Sep. 2012 Laying Down the Common Rules of the Air and Operational Provisions Regarding Services and Procedures in Air Navigation and Amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010, OJ L 281, 13 Oct. 2012, at 1–66.

67 *See* European Commission, *supra* n. 4, at 10.

68 Commission Regulation (EU) No 139/2014 of 12 Feb. 2014 Laying Down Requirements and Administrative Procedures Related to Aerodromes Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, OJL 44, 14 Feb. 2014, at 1–34.

69 *See* EASA, Vertiports Prototype Technical Specifications for the Design of VFR Vertiports for Operation with Manned VTOL-Capable Aircraft Certified in the Enhanced Category (PTS-VPT-DSN) (Mar. 2022).

70 *See* Benjamyn I. Scott, *Vertiports: Ready for Take-off … and Landing*, 87(3) J. Air L. & Com. 503–530 (2022), doi: 10.25172/jalc.87.3.6.

71 *See* European Commission, *supra* n. 4, at 11.

organisations like EUROCAE. Additionally, they are neither AMCs, GMs nor Certification Specifications that EASA publishes.[72] The use of the term 'prototype' makes it explicitly clear that the document is not to be regarded as secondary EU law and to differentiate it from AMC, GM and CS.

The adoption of new training and competencies requirements for remote pilots and pilots of VTOL aircraft should be prioritised. Safety is aviation's number one priority. Due to the unique nature of UAS and VTOL aircraft, remote pilots must have the necessary level of skills as well as knowledge of the rapidly evolving associated technologies. To make the above a reality, the Commission aims to adopt new training and competencies requirements that will guarantee the current high level of security in the EU skies.[73]

The adoption of an amendment to the aviation security rules aiming to ensure that aviation authorities and airports increase their resilience when faced with risks posed by drones is crucial.[74] Since 2018, the Commission has supported EASA in developing non-binding guidelines that help authorities prepare, manage and recover from drone incidents like the one at Gatwick Airport.[75] The EU Commission plans to continue developing initiatives like the above, recognising that the advisory nature of these guidelines does not always create the desired results.

While the Drone Strategy 2.0 was not meant to be a safety-oriented document, as evident from above, most of it assesses aspects of drone safety. The above, while peculiar, has an apparent justification which can be found in what the authors call *'safety above everything doctrine'* prevalent in all the relevant regulatory works of the EU administration and its associated organisations.[76]

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[72] *See* EASA, Management Board Decision No. 01-2022 of 2 May 2022 on the Procedure to be Applied by EASA for the Issuing of Opinions, CS and other Detailed Specifications, AMC and GM ('Rulemaking Procedure'), and Repealing Management Board Decision No 18-2015. While such aircraft are in the development stages, bridging solutions for airplane and helicopter pilots to operate these aircraft will be required. This can involve the use of the Operational Suitability Data (OSD) process. This is a composite part of the aircraft certification process and define, inter alia, the essential elements. As of 27 Jan. 2014, the OSD must be submitted to EASA by the aircraft manufacturers, including those building helicopters, which is considers important for safe operations. This includes data on: pilot training, maintenance staff and simulator qualification; the master minimum equipment list; and other relevant areas, depending on the aircraft's systems. *See* EASA, *Operational Suitability Data* (OSD), https://www.easa.europa.eu/en/domains/aircrew-and-medical/operational-suitability-data-osd (accessed 4 May 2023).

[73] *See* European Commission, *supra* n. 4, at 14.

[74] Proposing secondary legislation to Regulation (EC) No 300/2008 of the European Parliament and of the Council of 11 Mar. 2008 on common Rules in the Field of Civil Aviation Security and Repealing Regulation (EC) No 2320/2002, O L 97, 9 Apr. 2008, at 72–84.

[75] *See* EASA, *European Plan for Aviation Safety (EPAS) 2020-2024 European Union Aviation Safety Agency* 54 (13 Nov. 2019). *See* European Commission, *supra* n. 4, at 21.

[76] When EASA performs its rulemaking activities, it will conduct an Impact Assessment. This is 'a process for gathering and analysing evidence to support decision-making and that contributes to better regulation, ensuring that the regulatory material delivers its full benefits with minimum drawbacks'. As a result, while safety is the number 1 priority and the competence of EASA, other factors are taken

4.2 Synergies (civil–military cooperation)

The evaluation of possible amendments to the existing financing/funding framework to ensure a consistent approach in support of dual-use research and innovation to improve synergies between civil and defence instruments is another policy to be pursued. Currently, there is no regulatory framework for dual-use research in the EU. Thus, in collaboration with the EU Parliament and Member States, the Commission plans to assess the efficiency of the present funding regime in the EU and to consider potential amendments to serve the new needs better.[77]

The construction of an EU network on civil-defence drone testing centres to facilitate exchanges between civilian and defence sectors is of paramount importance. This point has been highlighted in previous Flagship Actions and presents the intention of the Commission again to bring the EU civil and defence sector closer.[78] However, this intention of the Commission is not just for drones, but constitutes a more general trend that covers more expansive areas of the EU policies. The drone sector is just the mean here, not this policy's cause.

Coordination with other relevant EU actors on a common approach to providing sufficient radio frequency spectrum for drone operators is needed. The emergence of 5G and the future of 6G[79] is crucial to utilise the limited spectrum resources to satisfy the relevant high bandwidth demands. Communication is vital in this new era of EU mobility, and the Commission aims to use all the emerging technologies like Artificial Intelligence[80] to secure its efficiency and safety.[81]

Encouraging all the relevant actors to align certification requirements[82] further for civil and military applications towards those set by EASA while considering military specificities and existing military certification standards is another necessity.[83] Those two Actions overlap in the need to develop new 'hybrid

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into account. EASA, Management Board Decision 01-2022 of 2 May 2022 on the procedure to be applied by EASA for the issuing of opinions, certification specifications and other detailed specifications, acceptable means of compliance and guidance material ('Rulemaking Procedure'), and repealing Management Board Decision No 18-2015.

77 *See* EASA, *supra* n. 75, at 17.

78 *Ibid.*, at 18–19.

79 *See* European Commission, *The Smart Networks and Services Joint Undertaking*, https://digital-strategy.ec.europa.eu/en/policies/smart-networks-and-services-joint-undertaking (accessed 4 May 2023).

80 *See* EASA, *Artificial Intelligence Roadmap: A Human-Centric Approach to AI in Aviation*, Version 1.0 (Feb. 2020).

81 *See* European Commission, *supra* n. 4, at 18–19.

82 In the US, there is a similar concept as it is evident from the Blue UAS. *See* for more details, Drone Innovation Unit, *Home*, https://www.diu.mil/blue-uas (accessed 29 Mar. 2023).

83 Standards can be either civil (e.g., European Organisation for Civil Aviation Equipment (EUROCAE) and AeroSpace and Defence Industries Association of Europe – Standardization (ASD-STAN)) or military (e.g., North Atlantic Treaty Organization (NATO)).

standards',[84] which apply to civil and military drone technologies, where the associated technology is similar or has similar applications.[85] The initiative above can materialise by encouraging relevant actors such as EASA, the European Defence Agency, EUROCAE and the national military authorities to further comply with the certification requirements set by EASA in the civil and military sectors. However, it is crucial to consider the military specificities and existing military certification standards to advance to the aforementioned compliance level successfully.[86]

The adoption of new Standard Scenarios for civil operations that could facilitate corresponding military use cases[87] and the adoption of a counter-drone (C-UAS) package are equally crucial. EU Commission's shift to geopolitical protectionism is evident in this Action too. The protection from malicious and non-cooperative drones, either as part of criminal/ terrorist actions or as part of hybrid/conventional warfare, requires access to affordable and reliable counter-measure technologies. Thus, the Commission plans to adopt a counter-drone (C-UAS) package outlining the EU's future policy in this field, which will contain inter alia precise actions on operational, technical and financial support to Member States. In parallel, there will be an evaluation and examination of the need for relevant legislative measures.[88]

4.3 Research and funding

The promotion of coordinated research on integrated Communication, Navigation and Surveillance (CNS) technologies is important. EU boasts extensive legislative work and policy-making vis-a-vis the UAS and the new mobility ecosystems. The EU Commission works towards the Research and Development to aid the development of the existing regulatory framework, to enhance U-space[89] and to support advanced services, e.g., IAM according to the European ATM Master Plan doctrine,[90] and the associated Roadmaps, as presented in the Strategic Research and Innovation Agenda for the Digital European Sky.[91] The above Agenda assesses merging the CNS domains into one integrated CNS

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84 European Commission, *Security Industrial Policy: Action Plan for an Innovative and Competitive Security Industry*, COM(2012), at 417; and European Commission, *Action Plan on Synergies Between Civil, Defence and Space Industries*, COM(2021) 70 final.

85 *See* European Commission, *supra* n. 4, at 20.

86 *Ibid*.

87 *See supra* n. 6.

88 *See* European Commission, *supra* n. 21, at 21.

89 *See* Commission Implementing Regulations (EU) 2021/664 (EU) 2021/665 and (EU) 2021/666.

90 European ATM Master Plan, *Digitalising Europe's Aviation Infrastructure*, Edition 2020, https://www.atmmasterplan.eu (accessed 4 May 2023).

91 SESAR-JU, *Strategic Research and Innovation Agenda for the Digital European Sky* (12 Oct. 2020).

ecosystem.[92] The above measure will lead to the interoperability between the up-to-now separate domains paving the way towards IAM environments.

The provision of research and innovation funding on drones and their integration into the airspace under the Horizon Europe Programme and the European Defence Fund is crucial. Since 2003 the EU has invested almost EUR1 billion in developing or using drones for innovative purposes is also needed.[93] This pattern of investment in drone innovation, according to the Strategy, will continue under the current Horizon Europe Research and Innovation Framework Programme[94] that includes the co-funded SESAR 3 Joint Undertaking aiming to develop the research and innovation environments, establishing a cooperative and interoperable relationship between the air navigation services providers and airspace users in the new IAM ecosystems.[95] Collaborative EU research in defence research and development will be funded by the European Defence Fund,[96] which has a nearly EUR8 billion budget for 2021–2027. This effort aims to secure EU independence and technological supremacy in the years to come in the drone sector.

Funding the creation of an online platform to support a sustainable IAM implementation by authorities, cities, industry and stakeholders is another key measure. The public (e.g., citizens and mobility users) and the broader society in terms of different societal groups, including inter alia private actors (e.g., businesses) and community groups (e.g., civil society associations), are considered some of the main factors for the success of IAS[97] in the EU.[98] The above has been proven in EASA's 'Study on the Societal Acceptance of Urban Air Mobility in Europe',[99] where the significance of local communities, cities and regions has also been underlined. The importance of the above pillars of IAS and IAM in the EU creates a particular need for more functional communication and definition of IAM opportunities and the consequent establishment of a *modus operanti* that will ensure the collaboration between EU, national and regional authorities to manage the impact of IAM in the European societies. Consequently, the Commission[100] will fund the development of an online platform by EASA as a 'pilot project

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92 *See* European Commission, *supra* n. 4, at 7–8.
93 *Ibid*., at 15.
94 *See* Horizon Europe, Research *and Innovation*, https://research-and-innovation.ec.europa.eu (accessed 4 May 2023).
95 *See* European Commission, *supra* n. 4, at 15.
96 *See* European Defence Fund, *Defence Industry and Space*, https://defence-industry-space.ec.europa.eu (accessed 4 May 2023).
97 *See* Andritsos & Agouridas, *supra* n. 30, at 317.
98 *See* European Commission, *supra* n. 4, at 12.
99 EASA, *supra* n. 49.
100 European Commission, Decision of 4 Jul. 2022 on the Financing of Pilot Projects and Preparatory Actions in the Field of Transport for 2022, C(2022) 4509 final.

Sustainable IAM Hub' that will provide aid and guidance to the totality of IAM stakeholders to achieve its appropriate and efficient implementation.[101]

Setting up a coordinated series of calls under the existing EU instruments and European Investment Bank loans to support a new flagship project on 'drone technologies' is another necessity. The European Investment Bank is a complementary source that can be used in addition to the ones mentioned above to fund research and development projects across the EU.[102] In 2022, the European Investment Bank introduced the Strategic Security Initiative which aims to mobilise investment in support of the EU's dual-use security and defence system by supporting the EU technology industry and civilian security infrastructure, focusing mainly on cybersecurity and disruptive emerging technologies.[103] Since, as was mentioned above, the technological supremacy of the EU is closely connected to security, the EU Commission introduces new initiatives to back the evolution of the drone sector financially.

Development of a Strategic Drone Technology Roadmap to identify priority areas to boost research and innovation, reduce existing strategy dependencies and avoid the emergence of new ones. The EU Commission acknowledges the reliance on specific technologies in the drone sector and presents its will to reverse these by boosting EU production via research and innovation.[104]

4.4 Other measures

The development of balanced economic and financial requirements for licensing of drone operators should be pursued. With the current regulatory framework, the economic and financial conditions to acquire a Community Air Carrier operating license are set out in Regulation (EC) 1008/2008.[105] The above Regulation, however, was initially tailored to cover the needs of large Commercial Air Transport Undertakings, and as a result, they might be disproportionate for drone operators.[106] To that end, the EU Commission plans to review the Regulation above to ensure the fair entrance of drone operators to the common market based on standard requirements.[107]

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101 *See* European Commission, *supra* n. 4, at 13.
102 *Ibid.*, at 16.
103 *Ibid.*
104 *See* European Commission, *supra* n. 4, at 18.
105 Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 Sep. 2008 on Common Rules for the Operation of Air Services in the Community, OJL 293, 31 Oct. 2008, at 3–20. *See* Benjamyn I. Scott, *Open Skies for Unmanned Aircraft in Europe: An Outlier or a New Approach?*, 46 (1) Air & Space L. 57–80 (2021), doi: 10.54648/AILA2021003.
106 *See* European Commission, *supra* n. 4, at 12.
107 *Ibid.*

The definition of criteria for a voluntary 'European Trusted Drone' label has to be another short-term ambition. The EU drone industry can produce state-of-the-art UAS/UAM with higher cybersecurity and counter-electronic warfare capabilities. Since the new era of mobility will contain more drones in urban environments, a voluntary 'European Trusted Drone' label could assure the users that the drones used in the airspace fulfil the highest safety, cybersecurity and production requirements.[108]

What is visible from these 19 Flagship Actions of the Commission is the intention of the EU leadership to enter a very competitive international field and utilise the renowned expertise that the Member States possess to create an innovative drone ecosystem plus its relevant framework with civil and military applications. The Drone Strategy 2.0 is a document deeply influenced by the international events of the last three years and the geopolitical turmoil in the European continent and worldwide. The war in Nagorno-Karabakh of 2019, the Covid-19 pandemic and the Russian invasion of Ukraine forced EU leadership to grow politically in many aspects. The prevalent shift to *geopolitical protectionism* and *technological sovereignty*[109] evident throughout this document, the will to develop technologies capable of countering drones threatening European security and the desire to build a lucrative and efficient drone services market constitutes two of the key drivers of the Drone Strategy 2.0.

Additionally, this Strategy is designed to contribute to the new growth strategy for the EU via research initiatives, innovation and entrepreneurship to achieve the objectives of the European Green Deal and Digital Europe.[110] The Commission envisions fulfilling the goals set in the Strategy by 2030 under the condition that all the relevant stakeholders will be successfully engaged in the associated projects of this new drone ecosystem.

A crucial element present in this roadmap is once more safety. While at the beginning of the Strategy, the Commission claims that the safety aspect of the drones has been assessed via the legislative measures taken or planned intra-EU; instead, a large portion of the Strategy is still dedicated to the safety dimension. The question that arises from the above statement is whether this continuous focus on safety presents something new from the past documents; in other words, does the Drone Strategy 2.0 give any new prospects on safety? The reply to this question is a challenging one. The majority of safety considerations published in the Strategy have indeed been present in previous EU documents and/or addressed in the extensive legislative work of EASA. The difference, however, introduced in

[108] *Ibid*., at 22.
[109] European Parliament, *Key Enabling Technologies for Europe's Technological Sovereignty*, https://www.europarl.europa.eu/thinktank/en/document/eprs_stu(2021)697184 (accessed 4 May 2023).
[110] European Commission, *supra* n. 4, at 22.

this roadmap is the prism under which the safety aspect is addressed. This is the prism of the EU military/civil sectors' cooperation-coordination, the Green and Digital transition and the new geopolitical environment, as stated above.

After the presentation of Drone Strategy 2.0, the following question arises: Does this new EU Commission policy address all the relevant to building a new broad IAS ecosystem in the EU issues? In the next paragraph, an assessment of the above question will take place in reference to the preceding Drone Strategy of 2014[111] and other past policy documents, i.e., Riga Declaration 2015, Warsaw Declaration 2016, Helsinki Declaration 2017 and Amsterdam Declaration 2018.

5 A BULLETPROOF STRATEGY? A COMPARISON OF DRONE STRATEGY 2.0 WITH ITS PRECEDING COMMISSION AND OTHER POLICY DOCUMENTS

It is accurate that Drone Strategy 2.0 attempts to cover most aspects of the upcoming mobility environments where drones will play a significant role. However, whether all the elements vis-a-vis the drones in the EU are covered in this document can be investigated via the comparative analysis of its preceding documents.

The first attempt of the EU Commission to set a roadmap in reference to the civil use of Remotely Piloted Aircraft Systems (RPAS)[112] in a safe and sustainable manner[113] happened back in 2014. What is intriguing from the beginning is the wording of choice to define the UAS. The term 'RPAS' represents a subcategory that refers to a drone where the remote pilot is also part of its function as stated in the International Civil Aviation Organization (ICAO) RPAS Manual[114] and the ICAO Circular on 'Unmanned Aircraft Systems',[115] which is in contrast to the 'autonomous operation' concept, as defined in Regulation 2019/947. Furthermore, the EU Commission then made a distinction between 'UAS', as a remotely piloted unmanned aircraft (from a distance), something that ICAO agreed on too and 'autonomous aircraft', which is programmed to fly autonomously without the involvement of a pilot.[116] However, this distinction between unmanned aircraft is not a case anymore in the EU, which now addresses all the unmanned aircraft in Strategy 2.0 with the overarching colloquial term 'drones',

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111 *See* European Commission, *supra* n. 10.
112 The term 'Remotely Piloted Aircraft Systems' was the wording of choice by the European Commission during the second trimester of 2014.
113 *See* European Commission, *supra* n. 25.
114 ICAO Manual on Remotely Piloted Aircraft Systems (RPAS), Doc 10019, First Edition (2015).
115 ICAO Circular 328 AN/190, Unmanned Aircraft Systems (UAS), First Edition (2011).
116 *See* European Commission, *supra* n. 25, at 2.

which is the layman term for all the 'UAS'.[117] The term 'drone' can, however, lead to some confusion as it could also include a ground or water-going vehicle.[118]

Another difference between the old version of the EU leadership's drone vision and its recent version is their sizes. The first roadmap was just nine pages long, with rather abstract and brief information without going into much detail, setting the intentions of the EU Commission very broadly. On the contrary, the recent Strategy is a twenty-five-page document that analyses most aspects that refer to drone market activities in the EU, either with civil or military applications.

The last two words of the previous paragraph lead to another noticeable difference between the two documents: the military application aspect of drones in the EU. While in the preceding policy document, the term military is mentioned three times, in 2.0 is mentioned twenty-six. That alone does not constitute a point of great significance, but content-wise, the shift in focus between the two documents is more than visible. The recent geopolitical events, as mentioned above, forced the EU to mature faster politically and attempt to fortify its security in a more centralised and efficient manner. Eleven Flagship Actions are related to the EU defence and security sectors aiming to support the collective defence and sovereignty of the Member States vis-a-vis the drones.

Another closely related to the above point is the acknowledgement in the 2014 document that the United States and Israel dominate the market in the military RPAS.[119] The recent Strategy underlines the EU industry's significance and capabilities to produce state-of-the-art drones in the military and civil sectors. Again, the current geopolitical circumstances forced the EU to develop and plan to evolve its drone sector further.

An oddly present element in the 2014 roadmap and not in the recent Strategy is the reference to a third-party liability regime and insurance.[120] While Strategy 2.0 undoubtedly presents a plethora of Actions related to the adaptation and evolution of the regulatory framework with the aid of the relevant stakeholders, it does not refer to the liability or insurance domain.

Regarding the 4 Declarations (i.e., Riga, Warsaw, Helsinki and Amsterdam), these relevant drone stakeholder initiatives paved the path towards developing Strategy 2.0. In contrast to the 2014 roadmap, where significant differences have been pinpointed, the entire content and concerns presented in these four policy

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[117] *See supra* n. 1. *See* FAA, *Removing the Man from Unmanned Aviation: Panel Recommends FAA Move to Gender-Neutral Language*, https://medium.com/faa/removing-the-man-from-unmanned-aviation-bfa1855f59db (accessed 4 May 2023).

[118] *See* Naval News, *World's Largest Submarine Drone Being Built in Germany*, https://www.navalnews.com/naval-news/2023/02/worlds-largest-submarine-drone-being-built-in-germany/ (accessed 4 May 2023).

[119] *See* European Commission, *supra* n. 25, at 3.

[120] *See ibid.*, at 8.

documents have been incorporated and addressed in Drone Strategy 2.0. Issues ranging from safety to standardisation evolution process and from the funding of the relevant projects to the participation of the stakeholders have found their position in the recent policy document of the EU Commission. The aforementioned constitutes proof of quality work by all the parties involved in the Strategy, as it presents the open-mindedness of the EU leadership to listen to the industry's positions and tailor an amended policy capable of addressing the concerns of all the relevant stakeholders.

Concluding this brief presentation of the past policy documents preceding the recent Strategy and their comparison with it, it can be stated that 2.0 is a multi-layered view of the EU leadership, substantiated but succinct without unnecessary theoretical analyses. It may lack an explicit provision on a third-party liability regime or a reference to the insurance domain. Still, it presents the will of the EU to continue evolving its regulatory framework via particular initiatives and mechanisms built during these years of progress. As per the Commission's statement in the relevant Press Release,[121] work on the nineteen operational, technical and financial Flagship Actions will be launched soon to build the appropriate regulatory and commercial environment for the upcoming drone airspace and market.[122] The work mentioned above will have four separate but overlapping goals:

- Adopting common airworthiness rules and new training requirements for remote and eVTOL (manned eVTOL) aircraft pilots in the Certified category.
- Funding the creation of an online platform to support local stakeholders and industry in implementing sustainable Innovative Air Mobility.
- Develop a Strategic Drone Technology Roadmap to identify priority areas for research and innovation to reduce existing strategic dependencies and avoid new ones arising.
- Defining criteria for a voluntary cybersecurity-approved drone label.[123]

The above future work that will complement the already great progress presented in the recent Strategy will pave the way for large-scale commercial operations. A prerequisite of the above will be that the EU will benefit from synergies between the civil, security and military use of drones and related technologies, including counter-drone solutions.[124]

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121 *See* European Commission, *Drone Strategy 2.0: Creating a Large-Scale European Drone Market*, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7076 (accessed 4 May 2023).
122 *Ibid.*
123 *Ibid.*
124 *Ibid.*

6 CONCLUSION

The Drone Strategy 2.0 is a singularity in the EU rulemaking due to its interconnectivity with other crucial projects and its broad scope of application, as presented above. The time for this updated roadmap was appropriate since the advancements in technology and EU policy-making demanded reaffirming the EU administration's vision.

In reference to the safety aspect that covered large parts of the Strategy, it is evident that EASA has already regulated most of the current drone operations in the EU, while it is underway to regulate the remaining ones in the near future (e.g., Certified category). However, there is still work that needs to be done, such as the further development of AMC and GM for the U-space regulation, which build on the first publication in December 2022,[125] the amendment of the current UTM regulation as the current one only covers high-level altitudes,[126] the addition of more Standard Scenarios for the Specific category of UAS operation, the implementation of the EASA Social Acceptance Study. Even though the Strategy evaluates the concept of safety, it does not address any of the above crucial matters for the EU drone environment.

New points are also covered in the Strategy that were not assessed in any previous policy document, such as the cooperation between the civil and military sectors and the importance of the societal acceptance of drone operations in the EU. Furthermore, it is very positive for the EU administration to connect this particular policy with other important EU projects, such as the Green Deal and the SSMS, which is crucial to avoid the duplication of efforts or diverging goals/actions and, on the final note, to bypass the EU bureaucracy.

Another critical step for the meaningful implementation of the Strategy is appropriately applying the 19 Flagship Actions. While in the accompanying document of the Drone Strategy,[127] the means for every action's implementation are specified, the time or which institution will oversee their exemplary implementation are not. This can create a void between the intentions of the EU administration and the desired actions rendering this roadmap void. A potential measure that could address the above matter is the establishment of a Task Force by the Commission with monitoring, coordination and counselling duties that will report on the respective Action's progress at the deadlines set by the EU administration.

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[125] EASA, AMC and GM to Implementing Regulation (EU) 2021/664 – Issue 1 (20 Dec. 2022).

[126] 'Member States may consider limiting the U-space airspace to a 150 m (500 ft) height above the ground or water'. *Ibid.*, GM2 Art. 1(3).

[127] *See supra* n. 42, at 53.

While the Drone Strategy 2.0 is a comprehensive document that touches many aspects related inter alia to the drone operation in the EU, it does not cover every aspect necessary. As presented in the last paragraph of this paper, this roadmap might be broader than its predecessors but still misses concepts such as third-party liability or insurance. Additionally, it does not contain provisions about unforeseen circumstances that may arise and complicate the operation of drones in the EU. The above-stated fact leads to the realisation that the Commission or associated organisations like DG MOVE cannot tackle every possible issue; thus, the establishment of a Task Force that will solely monitor the implementation of the Strategy's provisions is deemed of paramount importance. In this concept, efficient coordination with all the relevant stakeholders is considered crucial too for the success of the goals set in the roadmap.

Drone Strategy 2.0 gives a new perspective to significant projects of the EU and is a step forward, showing the Commission's determination and faith in an EU that will incorporate the at-scale operation of drones. The proper implementation of the vision set in the Strategy, though, will judge the success or not of this new roadmap.