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BREZPILOTNI LETALNIKI V EU: STRATEGIJE, REGULACIJA IN IZZIVI

UNMANNED AERIAL VEHICLES IN THE EU: STRATEGIES, REGULATION AND CHALLENGES

Povzetek Hiter napredek vojaške tehnologije je spremenil naravo vojskovanja, pri čemer so avtonomni oborožitveni sistemi, vključno z brezpilotnimi letalniki (BPL), postali osrednji del sodobnih vojaških operacij. Vedno večja avtonomija BPL sproža velike etične in pravne dileme glede tega, ali naj se odločitve o življenju in smrti prepustijo strojem. Ta članek preučuje uporabo BPL v izraelskih vojaških operacijah in rusko-ukrajinski vojni ter poudarja njihov vpliv na operativno načrtovanje. Prav tako analizira politične, regulativne in institucionalne odzive EU na varnostne in strateške posledice, ki jih ima obsežna uporaba BPL v sodobnih oboroženih konfliktih.

Ključne besede *Brepilotni letalniki, umetna inteligenca, Evropska unija, rusko-ukrajinska vojna, Izrael.*

Abstract Rapid advances in military technology have reshaped warfare, placing autonomous weapon systems, including unmanned aerial vehicles (UAVs), at the forefront of contemporary military operations. The increasing autonomy of UAVs raises profound ethical and legal dilemmas about entrusting life-and-death decisions to machines. This article examines the use of UAVs in the Israeli military operations and the Russo-Ukrainian war, highlighting their impact on operational planning. It also analyses the EU's political, regulatory, and institutional responses to the security and strategic implications posed by the extensive use of UAVs in contemporary conflicts.

Key words *Unmanned aerial vehicles, artificial intelligence, European Union, Russo-Ukrainian war, Israel.*

Introduction Rapid developments in military technology have transformed warfare in the 21st century. At the forefront of this transformation are autonomous weapon systems (AWSs), including unmanned aerial vehicles (UAVs or drones), which are increasingly used by both state and non-state actors. Their proliferation has significantly increased the frequency of attacks and casualties in recent years, while at the same time fuelling a new arms race between major powers. Both military practitioners and scholars of modern warfare have described this transformation as an ongoing “revolution in military affairs”, driven largely by the integration of artificial intelligence (AI) into these systems (Raska, 2021, pp 456–479).

The recognition capability and identification features incorporated into UAVs using AI and machine learning tools significantly expand their capabilities. These technologies facilitate the autonomous detection and targeting of objects and individuals through sophisticated sensors and optical platforms by analysing behavioural or emotional signals, such as movement patterns, gait, gestures, facial expressions, body posture, or signs of distress and anxiety (Horowitz, 2018). Likewise, algorithms drawing on data from sensors, satellites, and cyberspace can support or, in some cases, even replace human decision-making during critical phases of combat (Liaropoulos, 2025, p 134). Recent developments by the US Air Force, such as Autonomous Collaborative Platforms (ACPs), designed to operate alongside crewed aircraft and distinguish between friendly and enemy targets, aim to reduce pilot workload and enhance operational effectiveness (Gordon, 2025). These innovations are ushering in an era of relatively low-cost yet highly precise UAV operations, accessible to a wide range of actors and capable of shaping both operational assessment and the psychology of the adversaries (Horowitz, 2025).

In addition to the above, 3D printing technologies are quickly becoming a key aspect in security and military affairs. Both state (e.g. Ukraine and Myanmar) and non-state actors (e.g. ISIS and Al-Shabaab) have adopted these technologies to manufacture weapons and critical components in conflict environments, further lowering barriers to military innovation and diffusion (Dass, 2024).

While the fundamental nature of war remains unaltered, its character is constantly changing under the influence of technological innovation. The combination of AI, AWSs, and precision guidance technologies constitutes an ongoing revolution in military affairs, generating significant uncertainty about the future military capabilities and intensifying strategic competition between the great powers (Payne and Warbot, 2021, p 217). In this context, the increasing autonomy of UAVs raises critical questions about their strategic, operational, and ethical implications, particularly concerning the extent to which authority over life-and-death decisions should be delegated to machines.

In 2025, several UAV airspace violations occurred in Poland, Germany, Belgium, Romania, and Estonia, illustrating how Russia is employing these instruments for hybrid and psychological operations aimed at manipulating state behaviour and

societal perceptions (Duz, 2025). Some of these incidents have required temporary airspace restrictions, while others have raised concerns about potential espionage, escalation risks, and the vulnerability of civilian airspace to hybrid threats. These incidents underscore Europe's pivotal position in a broader technological and strategic rivalry in which UAVs function as instruments of power projection and hybrid influence.

In this context, the European Union (EU) cannot remain passive. The key question is no longer whether the Union can respond to these evolutions, but whether it can do so quickly, effectively, and on scale. As a political and strategic actor, the EU is called upon to develop coherent policies and regulatory frameworks that address the technological, institutional, operational, and ethical challenges posed by the growing military use of UAVs.

This article examines the use of UAVs in Israel's military confrontations with Iran and non-state actors such as Hamas and Hezbollah, and the Russo-Ukrainian war. It aims to highlight how the extensive use of UAVs is reshaping military doctrines, operational planning, and training requirements. In addition, it provides an analysis of the European approach to UAVs through the adoption of policies, strategies, and legislation and the establishment of institutions, highlighting the Union's evolving role in addressing the security implications of autonomous military technologies.

1 A BRIEF ANALYSIS OF UAVS

The use of UAVs has become a key feature of modern warfare. Based on technology often derived from open-access commercial applications, their cost is much less than traditional precision weapons, and they can be easily manufactured, modified, or upgraded to counter jamming or other defensive countermeasures, making them highly versatile. They can act as a complement or even a substitute for traditional artillery, offering low-cost precision strikes. Thus, actors with limited resources can acquire capabilities which were previously the preserve of technologically advanced states, creating conditions of 'mass precision' which strain defence infrastructure.

UAVs are automated aircraft, without crew or passengers, or remotely piloted (RPVs), and vary greatly in size and capability. They range from small commercial UAVs adapted for military use to large platforms such as the MQ-1 Predator¹, MQ-9 Reaper, and Bayraktar TB-2 (Iddon, 2020). Specialized versions include first-person view (FPV) drones for short-range attacks, or 'kamikaze' UAVs such as the Iranian Shahed-136. Their missions cover activities ranging from reconnaissance, surveillance, targeted strikes and transport of supplies to coordinated swarm attacks (Patton Rogers, 2024).

Two key developments are changing the traditional landscape of operations: their widespread availability and commercialization, and their automation, although

² The US Air Force officially retired the MQ-1 Predator on 9 March 2018. Its primary replacement was the MQ-9 Reaper, also manufactured by General Atomics Aeronautical Systems.

they remain under human supervision. In the realm of operational systems, we can categorize the modes of operation into three distinct levels (Shapiro, 2019). The first is semi-autonomous, where the operator retains the authority to authorize the use of force. Next, we have the supervised autonomous mode, which allows systems to operate independently; however, the operator can still control or interrupt their actions when necessary. Finally, there is fully autonomous operation, where these systems can select and engage targets completely on their own, without any further human intervention (US Department of Defence, 2023).

Today, most military UAVs operate at the first two levels, but technological developments are moving towards the third. Increasing automation allows them to make decisions faster and adapt to complex battlefields, but it raises serious questions about human control. It remains important to ensure that these systems do not act in ways which are counterproductive to the desired objectives.

The advantages of UAVs are multiple and lead to new operational tactics. In defence, they allow forces with fewer resources to offset the enemy's superiority in armoured units, infantry, or air power. In offense, they can be used with high effectiveness to eliminate conventional units, or for long-range strikes on critical infrastructure deep in the rear (Holeman, 2025). Forming swarms, they can attack simultaneously from different directions and altitudes, adapt in real time, and exploit gaps in defence (Sentient Digital, 2026). Smaller airborne UAVs can even threaten manned aircraft during critical take-off or low-flying phases. Thanks to the precision of their sensors, they can limit collateral damage and, in many cases, be recalled, minimizing the risk to civilians. The use of UAVs allows the attacker to determine the degree of intensity and escalation of a conflict, adapting offensive actions according to their objectives. In addition, they can operate in a wide range of physical environments using advanced sensors, including in darkness and adverse weather conditions, without exposing the operators to danger, since they are in remote locations. UAVs can operate continuously, without the limits of fatigue or emotional stress that humans have and enter enemy territory more discreetly than missiles (Liaropoulos, 2025).

UAVs are evolving rapidly, incorporating increasingly advanced AI which allows them to operate with a high degree of autonomy. Control is still often carried out from remote operations centres, which keeps operators safe (Cuadra and Whitlock, 2014). The trend is clear: they are becoming 'smarter' and more capable of carrying out specialized missions, overcoming countermeasures, and operating without constant human guidance.

The increased use of UAVs in recent years has also highlighted certain limitations. Continuous aerial surveillance limits the possibilities of surprise and manoeuvre on the battlefield, which depends on the level of capability and strategic doctrine of the parties involved. The dependence of UAVs on radio frequencies and navigation systems makes them vulnerable to interference, while loss of connection is a critical risk, as it can lead to the destruction or capture of the system by the adversary.

Furthermore, their widespread proliferation means that when both sides deploy large numbers of UAVs for defence and offense, the attacks neutralize each other, limiting both sides' ability to achieve a decisive strategic advantage (Early and Gartzke, 2021, pp 1551–1575).

Beyond their strategic and operational advantages, the increasing autonomy of UAVs raises concerns related to human agency in the use of force. One such concern is the physical and psychological 'distance' between UAV operators and the battlefield, which can lower the threshold for initiating military operations. This distancing effect is combined with operators' excessive trust in the decisions of the algorithmic systems, often resulting in 'automation bias', defined as the uncritical acceptance of machine-generated system results without sufficient human critical evaluation (Liaropoulos, 2025). This may limit the moral reflexes of operators, removing them from immediate awareness of the consequences of their actions. As Shiri Krebs points out, "technology does not eliminate bias; it simply shifts the point at which it influences the decision" (Krebs, 2023).

In practice most military UAVs are designed primarily to kill rather than capture. The absence of internationally recognized rules specifically governing UAV usage creates significant gaps in legal oversight and political accountability, as these systems are not fully regulated by the existing laws of armed conflict. In this context, maintaining human control over UAV operations is a critical safeguard for preventing abuse and upholding democratic and humanitarian norms.

2 THE USE OF UAVS IN CONFLICTS

2.1 The case of the Russo-Ukrainian war

The Russo-Ukrainian war has highlighted the essential role of UAVs. Both sides deploy thousands of UAVs of various sizes and types daily, making them a key factor in operations related to attacks, surveillance, reconnaissance, psychological operations, and sabotage (Cooper et al., 2025). In 2023, nearly 30% of all recorded UAV attacks worldwide were conducted in Ukraine, resulting in thousands of casualties among both soldiers and civilians (Institute for Economics & Peace, 2024). The UN Human Rights Monitoring Mission reported that short-range UAV attacks killed at least 395 civilians and injured 2,635 between February 2022 and April 2025 (United Nations, 2025). The effectiveness of Ukrainian anti-aircraft systems has restricted traditional Russian air superiority, significantly increasing their reliance on UAVs.

In the early stages of the conflict, Bayraktar TB-2s played a significant operational role and garnered significant media attention. However, they gradually became more visible on the battlefield, likely due to advancements in Russian anti-aircraft systems (Dangwal, 2022). According to the Google Threat Analysis (2023), this decline can be attributed to a successful cyber espionage operation by the pro-Russian hacking

group Sandworm, which targeted the Turkish manufacturer of the UAVs and enabled Russian forces to learn how to disable them.

In response, Ukraine developed a strategy focused on the mass production of small, inexpensive FPV and AQ400 Scythe UAVs. These can carry explosives and attack tanks, vehicles, or soldiers in real time (Sutton, 2025). By the first half of 2024, Ukraine had reportedly manufactured over one million UAVs (Khrebet, 2024). These UAVs are responsible for up to 80% of Russian front-line casualties, significantly reducing Ukraine's dependence on artillery (Santora, 2024). The establishment of a new branch within the Ukrainian armed forces, the Unmanned Systems Forces (USF)², highlights the growing importance of UAVs in their military strategy (Ministry of Defence of Ukraine, 2026). Additionally, Ukraine utilizes longer-range UAVs, such as the Ukrjet UJ-22 and UJ-26, which can conduct strikes up to 800 km deep into Russian territory (SPE UKRJET, 2026). They also utilize suicide UAVs, such as the Switchblade (Kramer, 2023).

This strategy is based on the mass production of UAVs operated by small teams of front-line operators and marksmen. These operators may lack extensive military experience but possess a game-like perception and handling ability, allowing them to effectively target tanks, vehicles, or even soldiers in real time. Ukraine views UAVs as an asymmetric advantage, allowing it to reduce its dependence on artillery, where it lags behind Russia, and to conduct deeper strikes (Sutton, 2025).

The Ukrainian armed forces have also made extensive use of 3D printing to address critical ammunition shortages during their conflict with Russia. A prime example is the construction of UAV bomb-dropping mechanisms, which underscores the importance of organic, on-site production for direct operational support (Hudson, 2023). In November 2023, Germany donated 3D-printed Titan Falcon UAVs to Ukraine. These low-cost systems offered a long flight endurance and a range of up to 400 km, enabling surveillance missions (Boyko, 2023). Their significance lies in the rapid, low-cost production model that enabled accelerated deployment and continuous design improvements. The use of this technology highlights its strategic importance as a low-cost force multiplier, enhancing operational resilience, reducing reliance on traditional supply chains, and reshaping the established notions of the defence industrial base. This evolution carries direct implications for the EU's defence planning and strategic autonomy.

A notable example of UAV operation occurred during Operation Spider Web in June 2025, when Ukraine deployed 117 UAVs to destroy 41 Russian aircraft, including strategic bombers (BBC Verify, 2025). This operation combined surprise, thanks to the covert transportation of the UAVs into Russian territory, and technological innovation. It demonstrated that Ukraine could bring the fight to Russia's doorstep (Bondar, 2025).

² Link from the site of Ukraine's Unmanned Systems Forces: <https://usforces.army/en/>

At sea, Ukraine has employed submarine UAVs (Uncrewed Surface Vehicles - USVs), known as Sea Baby 2024, to strike Russian forces in the Black Sea (Abdurasulov, 2024). On land, they utilize over 140 models of land-based UAVs (Uncrewed Ground Vehicles – UGVs) for various purposes, including transporting weapons, demining, and evacuating the wounded (Molloy, 2024). In previous instances, they have equipped small bombs and explosives in UAVs, effectively transforming them into ‘mini-bombers’ (Altman and Rogoway, 2025).

In April 2025, Ukraine announced the creation of Brave1 Market, a new digital marketplace for military technology and equipment. This initiative introduces innovative elements which are unprecedented in the defence industry, particularly the concept of ‘gamification in military operations’³. A key feature of the platform is the Drone Army Bonus system, which rewards UAV operators with points for verified attacks on Russian targets. By the end of April, the Ukrainian unit known as Magyar’s Birds had emerged as the top performer with over 16,000 points (Khomenko, 2025).

Russia’s doctrine concerning UAVs focuses on utilizing drones for extensive surveillance, precision strikes, and achieving significant operational outcomes. The goal is to address the traditional vulnerabilities of conventional forces and establish dominance in the evolving unmanned battlespace (Bommakanti and Mustafa, 2025). This doctrine formalized the military use of UAVs by creating a distinct branch known as the Unmanned Systems Forces (Voysk Bepilotnykh Sistem (VBS)), marking a significant shift from their ad hoc use to their institutional integration within the military structure. The VBS was established in November 2025 as a direct response to the lessons learned from the conflict (Altman, 2025). Its primary missions include conducting deep strikes, conducting reconnaissance operations, and increasing artillery effectiveness through the extensive use of UAVs. The operational strategy focuses on degrading enemy capabilities, closely linking unmanned assets with artillery fire, and improving situational awareness. Overall, the UAV doctrine and the formation of the VBS reflect Russia’s transition to a more institutionalized, technologically advanced, and systemic approach to modern warfare, where unmanned systems are now pivotal to operational power.

Russia is reportedly procuring 100,000 low-end UAVs per month from both domestic and foreign sources (Schmidt, 2024). The military makes heavy use of Iranian Shahed-136s, which have been modified to evade detection, carry heavier payloads, and deploy anti-tank mines (Collett-White et al., 2024). Overall, Russian forces follow a specific pattern during attacks, deploying multiple UAVs, followed by artillery, missiles, and infantry support.

The Russian President, Vladimir Putin, has acknowledged that UAVs have played a crucial role in the conflict. He emphasized the importance of quickly deploying and forming specialized forces within the Russian military (Reuters, 2025). At the same time, the Russian government is developing a recruitment ecosystem

³ Link to the website: <https://market-brave1.delta.mil.gov.ua/>

aimed at attracting young people into the armed forces and state-owned companies through educational games and competitions. This initiative is attracting hundreds of thousands of students to engage in software development and UAV technology. The Berloga (Bear's Den) platform⁴, created by the Russian Agency for Strategic Initiatives, incorporates special games designed for operating UAVs and developing software for their application (Ashurkevich et al., 2025)⁵. This platform has attracted over 600.000 users, offering rewards in the form of points that can be applied to the country's final exams⁶.

The war in Ukraine has effectively become a testing ground for military technology, demonstrating that advances in offensive capabilities are consistently met with corresponding defensive measures. This conflict showcases how UAVs, when combined with AI, are not merely supportive tools but are fundamentally transforming the nature of warfare.

2.2 The case of Israel's military confrontations

Hammas employed FPV UAVs during its attacks against Israeli citizens on 7 October 2023. They used inexpensive, commercial UAVs to overwhelm Israeli outposts and defences. In response, the Israeli Defense Forces (IDF) intensified their operations to locate and destroy underground tunnels, restrict Hammas' operations, and cut off the organization's supply lines (All Israel News Staff, 2024). Additionally, Hammas has deployed 'suicide' UAVs loaded with munitions to target Israeli observation posts and defensive positions (Bohbot, 2024).

The Lebanese organization Hezbollah began using Iranian-made UAVs in 2000 after Israel withdrew from southern Lebanon. They sent their first Mirsad reconnaissance drone over Israeli airspace in 2004. Hezbollah's UAV programme continues to receive significant assistance from Iran and is believed to be assembled by specialists within the organization in Lebanon. In response to Israel's attack on Gaza, Hezbollah launched approximately 1,500 surveillance and attack UAVs against Israeli military positions along the border with Lebanon between October 2023 and mid-October 2024 (Arab News, 2024).

In retaliation, the Israeli army conducted bombing and airstrikes in several areas of southern Lebanon, prompting Hezbollah to conduct UAV attacks (Mrroue, 2024). In June 2024, Hezbollah released a video from one of its Hudhud drones, revealing military and political infrastructure within Israel⁷. The publication of this footage served not only as an intelligence gathering act but also as a psychological tactic, demonstrating Hezbollah's capacity to monitor critical targets deep inside Israeli territory (Jadah, 2024).

⁴ The link to the game: <https://platform.kruzhok.org/apiary>

⁵ For the young participants in Berloga, the journey from classroom to war begins on a fictional planet inhabited by 'smart bears' who must defend themselves against 'bees'. In one game, players use drones to protect a valuable resource called 'energy honey' from cyber-insects, fending off 'rising waves of enemies'. In another, they learn to operate quadcopters and deliver cargo to precise coordinates.

⁶ The statistics are published on this website: <https://platform.kruzhok.org/>

⁷ Link to the footage from the video: <https://youtu.be/7tP6CM5puEY?feature=shared>

During the 2025 Israel-Iran conflict, UAVs were not merely a supporting means; they were systematically integrated into the core of strategic and tactical decision-making. The confrontation with Iran marked a milestone, as it was the first large-scale military conflict where UAVs and AI played a determined role in shaping the operations. Iran employed UAVs with autonomous targeting software, allowing them to operate without human intervention. In May 2025, these systems were used in large-scale operations (France24, 2025). By June, tensions had escalated, with both sides utilizing UAVs: Israel penetrated Iranian airspace to attack selected targets, while Iran launched approximately 100 UAVs against Israeli positions (Turak, 2025).

The IDF, in close cooperation with the USA, has implemented a new model of military effectiveness. This model emphasizes the integration of advanced AI systems, which enhance decision-making processes and operational capabilities. In addition, there is a high level of cross-sector coordination, which ensures communication and collaboration between various military branches. A key aspect of this approach is the complete fusion of digital and physical operational capabilities, allowing for coordinated actions across land, sea, air, and cyberspace. Interconnectedness enables forces to conduct parallel and simultaneous actions in multiple domains, improving overall efficiency. As a result, the IDF has experienced increased operational speed, enabling rapid responses to threats. The dynamic and flexible targeting capabilities ensure that military actions are tailored to specific situations, leading to improved accuracy in strikes compared to traditional methods (Wallace-Wells, 2024). This strategy marks a significant evolution in modern military operations.

In June 2025, Israeli and US forces conducted extensive attacks during Operations Rising Lion and Midnight Hammer, characterized by a rapid turnover of targets across a wide geographical area. Within a few days, critical Iranian military and nuclear infrastructure was reportedly damaged or degraded, including the underground enrichment facilities at Natanz and Fordow, as well as mobile launch platforms in remote areas. According to Israeli military estimates, UAVs played a critical role in target detection, tracking, and neutralization, substantially increasing operational effectiveness (Ryan, 2025). This technological advantage would likely decrease the chances of a prolonged war of attrition and the related risk of broader regional destabilization. The campaign continued into early 2026, focusing on joint strikes against additional strategic assets, such as the Isfahan steel plants.

3 THE EU'S APPROACH TO UAVS

In March 2025, Ursula von der Leyen, the President of the European Commission, stated that “if Europe wants to avoid war, Europe must get ready for war” (European Commission, 2025a). This remark reflects a significant shift in the EU's approach to security, defence, and deterrence. It emphasizes that maintaining peace can no longer rely on diplomatic and economic measures; instead, credible military preparedness is crucial in a constantly evolving geopolitical landscape.

This perspective does not indicate a move toward militarization. It presents 'readiness' as a preventive strategy, focusing on developing capacity, resilience, and technological advancements. The EU's increasing emphasis on UAVs underscores their vital role in military operations, especially considering recent conflicts. Failing to invest in UAV capabilities, human resources, and strategies for their deployment would leave the Union structurally vulnerable to contemporary threats.

Furthermore, UAVs are particularly well suited to support the EU's defensive and deterrent posture. They enhance situational awareness and enable early warning and response measures, thereby enhancing deterrence while reducing the risk of escalation. At the same time, investments in domestic UAV production contribute to strategic autonomy by reducing reliance on external suppliers for essential defence capabilities. This industrial and technological focus strengthens the credibility of EU preparedness, ensuring it is sustainable and remains under European control.

The EU also places a particular emphasis on dual-use UAV technologies, which can be applied to both civilian and military purposes. This approach not only enhances resilience at the collective level but also strengthens national capabilities in areas such as border surveillance, infrastructure protection, and crisis management.

In this context, the EU is working to establish a coherent strategy for the development and use of UAVs, while also addressing related challenges to enhance its autonomy and resilience. The EU is promoting research, innovation, and capability development through the European Defence Fund (EDF) and Permanent Structured Cooperation (PESCO). EU leaders have committed to strengthening the production, innovation, and interoperability of critical and emerging technologies for security and defence purposes, including UAVs (European Council, 2022).

The Capability Development Priorities approved by the Member States' Defence Ministers in 2023 reflect a comprehensive approach to UAVs, including the full range of UAV types, the upgrading of existing platforms, and the training of personnel (European Union External Action, 2023). Most PESCO actions related to UAVs focus on support, surveillance, countermeasures, logistics, and the cooperation of unmanned and manned systems, rather than the direct deployment of armed combat UAVs. Examples of such programmes include Integrated Unmanned Ground Systems (iUGS and iUGS2) and the Counter Unmanned Aerial System (C-UAS)⁸.

The EDF has been consistently investing in emerging technologies, particularly in UAVs and countermeasures, since 2015 (European Union, 2021). Indicatively, in 2021, it allocated around €100 million to the Eurodrone initiative (Heiming, 2021). This collaborative project is part of PESCO and is titled 'European Medium Altitude Long Endurance Remotely Piloted Aircraft Systems (MALE RPAS) (PESCO, 2026). The aim is to develop long-endurance UAVs for reconnaissance, surveillance, targeting, and intelligence gathering. In parallel, the EDF allocated €68 million in 2023 for UAV countermeasure systems, with more than €200 million designated

⁸ For more information: <https://www.pesco.europa.eu/>

for UAVs of various sizes and applications (Andersson and Simon, 2024). The EDF has ramped up its investments to meet evolving security challenges. By May 2025, the European Commission confirmed it had mobilized €910 million under the 2024 EDF cycle to address critical capability gaps, including UAV countermeasure and AI-driven aerial systems (European Commission, 2025b).

The 2025 Work Programme allocated approximately one billion to collaborative defence research and development projects across sectors such as affordable mass drones and space-based intelligence, surveillance, and reconnaissance (ISR) constellations (European Commission, 2025c). The 2026 Work Programme continues to enhance European collaborative defence research and development by investing an additional €1 billion, which includes €30 million for the situational awareness of swarm UAVs (European Commission, 2025d).

Within the broader strategic framework, the EU seeks to create synergies between the civil and defence sectors, as well as with NATO. The European Defence Agency (EDA) is advancing UAV technology through joint projects and the Defence Innovation Centre (European Defence Agency, 2022). The European Defence Industrial Strategy aims to enhance mass production and the joint procurement of affordable UAVs (European Parliament, 2024b). This initiative can be supported by the European Defence Industrial Programme (European Parliament, 2024a) and the Regulation on Strengthening the European Defence Industry through Joint Procurement (European Parliament, 2023).

Meanwhile, the European Peace Facility is being utilized to provide urgent support to Ukraine in terms of UAVs. The Drones 2.0 Strategy is aligned with these efforts, incorporating actions such as creating a UAV technology roadmap and establishing a testing network for civil-defence systems (European Economic and Social Committee, 2023).

EU institutions and Member States are implementing both legal and technological measures to address the increasing threat posed by UAVs. The ReArm Europe/Readiness 2030 plan includes funding of over €800 billion to enhance defence capabilities (European Parliament, 2025). A new financial instrument, SAFE, will support a large investment of €150 billion, backed by an EU guarantee. The White Paper on European Defence – Readiness 2030 identifies UAVs and countermeasures as key priority areas for establishing a robust European defence (Defence Industry and Space, 2025). It proposes a continent-wide ‘drone wall’ or ‘dome’, as part of the European Drone Defence Initiative (EDDI), which handles the ‘lower’ layer of air defence, specifically targeting UAVs. This detection and defence framework is expected to be operational by 2027, aiming to enhance collective airspace security across the EU (Clapp, 2025).

At the national level, Germany is progressing towards granting state police explicit powers to neutralize UAVs considered dangerous⁹. Meanwhile, Belgium has

⁹ Link to the announcement: <https://youtu.be/yjexD6Vnzvo?si=7GOPCoLzEaLZX4Vn>

proposed a European Aviation Security System capable of detecting and intercepting UAVs to differentiate between legitimate operations and suspicious activities (Hess, 2025). In parallel, countries are developing integrated anti-drone defence systems or ‘domes’, equipped with tracking and neutralization capabilities designed to provide multi-layered protection against UAVs and other aerial threats. Notable examples include Italy’s Michelangelo Dome (FP Explainers, 2025), France’s Alta Ares Tactical Protection Dome¹⁰, and Greece’s Achilles Shield (Ekathimerini, 2026). These initiatives support broader EU-level proposals aimed at protecting borders and critical infrastructure. The systems utilize advanced sensors, AI, electronic jamming, and interception technologies to automate the detection, tracking, and neutralization of hostile UAVs (Burgess, 2025). Collectively, they represent a shift towards an integrated, multi-sectoral defence architecture in the EU.

However, the EU faces significant challenges in developing a coherent security framework against UAVs, primarily due to differing views between Member States regarding the extent of sovereignty and national interests they are willing to relinquish for common European protocols and structures. The rejection of the Readiness 2030 plan at the October 2025 European Council meeting in favour of strengthening the intergovernmental EDA highlights these divisions (Maulny, 2025).

Another challenge is the limited industrial capabilities within the EU: joint procurement mechanisms are unclear, defence markets are fragmented, supply chains are vulnerable, and there is significant reliance on external suppliers for critical components such as semiconductors and raw materials (European Commission, 2025e). The EU lags behind global competitors like the USA, Israel, Russia, and China in developing and establishing countermeasure capabilities for UAVs (Aeromorning, 2026). Moreover, the development and operation of countermeasure systems raise complex legal and ethical concerns. These range from the risks associated with UAVs being shot down in urban areas to issues surrounding surveillance and privacy. These risks are frequently discussed in the European Parliament, especially by the Baltic states and others on the eastern flank, who face direct Russian hybrid threats and are advocates for strengthening the EU drone wall (Future War, 2025). Without coordinated progress in all these areas, Europe risks remaining stagnant and unprepared, leaving the continent vulnerable to evolving hybrid threats.

Conclusion UAVs have become a fundamental component of contemporary military operations, significantly influencing how warfare is conducted at the tactical level and increasingly shaping operational concepts and decision-making processes. Recent conflicts, such as Israeli military operations and the Russo-Ukrainian war, illustrate how UAVs are increasingly embedded in multidomain combat environments that combine air, space, land, and cyber capabilities. Rather than representing a sporadic or disruptive innovation, the growing reliance on UAVs reflects an evolution to faster, more interconnected, and increasingly automated missions. In this landscape, aircraft, satellites, and cyber systems are increasingly linked within unified decision-making networks.

¹⁰ Link to the website: <https://www.altaares.com/>

UAVs also create multiple simultaneous threats, placing considerable strain on existing defence infrastructure and making it more challenging for existing traditional air defence systems to respond effectively. Empirical evidence from recent conflicts suggests that, despite improvements in accuracy and autonomy, UAVs have not fundamentally shifted the balance of power. Countermeasures and air defence systems continue to adapt, limiting the strategic decisiveness of UAVs. Their impact is therefore best understood as evolutionary rather than revolutionary, while they provide tactical capabilities and temporary operational advantages. Their broader importance lies in how they are integrated into existing military structures, rather than in their ability to determine strategic outcomes. This shift has important implications for operational planning, training, and decision-making structures, as military effectiveness depends on the ability to integrate autonomous systems into broader operational frameworks.

Within this evolving security landscape, the EU seeks to strengthen preparedness, deterrence, and strategic autonomy through UAV capabilities and countermeasures. Initiatives under the EDF, PESCO, and the Readiness 2030 framework reflect growing recognition of UAVs as enablers within the EU's security and defence architecture. The EU's emphasis on dual-use technologies and civil-military integration further supports resilience across both civilian and military domains. Nonetheless, significant challenges remain. The fragmented national approaches, the limited industrial capacity and access to advanced systems, the vulnerable supply chains, and the lack of specialized personnel continue to constrain the development of a coherent European approach to UAVs. Addressing these challenges will depend not solely on investment and technological innovation, but also on sustained political coordination and regulatory harmonization.

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