



# STRONGER EUROPE – UNITED FRONT

Europe's Security Is Being Decided in Ukraine



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# EXECUTIVE SUMMARY

Since the beginning of Russian aggression against Ukraine in 2014 — first with covert forces and irregular units, followed by conventional military operations — Ukraine has been forced to adapt rapidly and develop new methods of warfare. Over the past decade, and especially since the full-scale invasion in 2022, Ukraine has effectively become a global laboratory for modern warfare, pioneering technologies and operational concepts that are now being studied and adopted even by major military powers such as the United States during the war in the Middle East.

The Russian aggression against Ukraine has accelerated a technological revolution that is fundamentally changing how modern conflicts are fought. Ukraine's experience demonstrates that the future of warfare will be shaped by drones, electronic warfare, robotics, and rapid innovation cycles. Some analysts argue that the scale of this shift is comparable to earlier military revolutions triggered by the introduction of gunpowder, tanks, or nuclear weapons.

Nowadays, relatively small and inexpensive technologies, when deployed at scale, can threaten even the most advanced military platforms. Large numbers of drones can destroy tanks and artillery systems; maritime drones can endanger major naval vessels; and long-range drone strikes can reach deep into the rear, targeting strategic assets such as docked aircraft. This evolution shows that modern warfare increasingly favors adaptability, rapid innovation cycles, and scalable technologies rather than a small number of big expensive platforms.

For Europe, this creates an urgent strategic imperative: if it seeks to maintain its security and strategic agency, it must significantly strengthen its capabilities and learn from Ukraine's experience, rather than risk becoming an unprepared battlefield in a future conflict dominated by these technologies. Supporting Ukraine should not be viewed only as assistance to a partner under attack, but as a critical investment in Europe's own security. European defense actors need deeper integration with Ukraine's wartime innovation ecosystem through both industrial cooperation and direct engagement with Ukrainian forces and training institutions. Ukraine's innovation ecosystem, rapid production cycles, and continuous combat-driven technology upgrades make it a central partner for Europe in preparing for the next generation of conflict.

This paper analyzes the dynamics of drone use at the battlefield that is only one element of a broader technological race underway in Ukraine, which also includes developments in long-range strike systems, maritime drones, and other emerging capabilities. In addition, while learning how Russia fights and adapts on the battlefield is essential for preparing Europe's own defense, a central lesson of this war remains **that no partner army or defense industry can fully understand or replicate these dynamics by observing from the outside.**

# INTRODUCTION

Russia's full-scale invasion of Ukraine in February 2022 began as a conventional military campaign that expanded their 2014-22 aggression based on massed armor, artillery, and airpower. Moscow expected Ukraine's rapid collapse, but instead encountered a resilient society, critical intelligence failures, and a Ukrainian defense effort that compensated for conventional inferiority through rapid technological adaptation and battlefield innovation.

A modern-day David vs Goliath challenge prompted Ukraine to seek innovative asymmetric solutions in the land, air and maritime domains. The most well-known operations included but were not limited to the sinking of the Moskva warship in 2022, the Spiderweb operation against the Russian strategic aviation in 2025, and the systemic "hellish sanctions" in the form of the long-range strikes against the Russian oil refineries that significantly intensified in the second half of 2025 etc.

Simultaneously, between 2022 and 2026, Ukraine transformed from a net recipient of foreign military assistance into one of the key enablers of Europe's security. Not only Ukrainian forces are degrading Russian military power and army – e.g. Ukrainian General Staff reported Russia's casualties equal to 1,24 million soldiers<sup>1</sup> between February 2022 - February 2026, but also, through sustained high-intensity combat, Ukraine developed capabilities that most European armed forces and defense industries currently lack: a combat-hardened military with deep operational knowledge of how Russia conducts modern war, and a uniquely adaptive defense innovation ecosystem.

The dire lack of conventional weapons triggered rapid development of new military technology. Ukraine's experience now shows how the battlefield is increasingly becoming a connected environment where drones (UAVs), ground robots (UGVs), sensors and strike systems expand rapidly and dramatically operate through continuous data exchange. Digital instruments strengthened by the enforcement of artificial intelligence enable faster decisions, more accurate targeting and rapid adaptation based on frontline feedback.

UGVs are already increasingly used for logistics, evacuation, reconnaissance and fire support. Their use is expected to grow significantly as armies increase reliance on robotic platforms to reduce risks to personnel and maintain operations under constant surveillance.

Though present-day efficiency of the use of heavy vehicles has reduced compared to 2022, they are likely to return in a new form, re-entering the battlefield once integrated with robotics through gaining autonomous driving modes, protective escort drones, and real-time sensor networks.

Autonomous systems are expanding quickly as well. These platforms navigate, avoid threats and complete tasks with limited human involvement. Drone swarms – large groups of inexpensive drones acting together and piloted by one soldier are likely to become a central feature of future operations and will be able to impose high costs on opponents and create new forms of battlefield saturation. Advanced neural networks will help operators coordinate these systems and integrate information from many sources.

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<sup>1</sup> "The estimated total combat losses of the enemy from 24.02.22 to 05.02.26." General Staff of the Armed Forces of Ukraine. February 5, 2026. Facebook <https://lnk.ua/JvKufhMo9>

Ukrainian Armed Forces are using a digital ecosystem DELTA that enables real-time battlefield awareness, supports operational planning, and facilitates information sharing within units, brigades, formations, and, when needed, with Ukraine's partners. The Ministry of Defence notes that DELTA has successfully passed information security validation and was proven in real combat during the defense of Kyiv in 2022, the destruction of the enemy Black Sea Fleet, the liberation of Zmynyi Island (Snake Island), and the de-occupation of Kherson.<sup>2</sup>

Moreover, only continuous, 24/7 interaction between frontline units, many of which established their own R&D labs, and domestic weapons producers enables rapid development, testing, and iteration of military technologies under battlefield conditions. This feedback-driven model allows producing resilient operational technologies proven through sustained combat against an adversary that is constantly upgrading its own technology as well.

However, while Ukraine pioneered many of these tech solutions first, in many ways Russia is better at scaling them up on a national level. The result is a new model of warfare in which technological advantage is short and temporary — with the timespan constantly reducing to months or even weeks — before being replicated and scaled up by the adversary, prompting for fast development of counter-technology.

Simultaneously, one of the most dangerous assumptions circulating in parts of Europe today is the underestimation of Russia's ability to adapt under pressure — and its readiness to sustain massive human and material losses in exchange for modest tactical progress, as well as Russia's ongoing efforts to destabilize the European societies from the inside. Russia should not be perceived as too weak to threaten European states beyond Ukraine. It is adaptive, learning, copying, and scaling in real time. While presently Russia is indeed facing financial and budgetary constraints, it still remains capable of rapid tactical and technological learning under wartime pressure.

Moreover, Russian ongoing hybrid attacks in the European states that are in fact "phase 0 war" are being often deliberately downplayed as insignificant by political leaders. Such reaction is often the symptom of the general underestimation of the Russian threat to the European security and sovereignty — even though the NATO<sup>3</sup> and intelligence services of several European states<sup>4</sup> recognize Russia to be the most significant and direct threat to security, peace and stability in the Euro-Atlantic area. Therefore, such Russia's attacks could be used as a factor to mobilize European societies around the increase of defence spending and support for Ukraine, or even taking bolder steps like providing Sky Shield for Ukraine and deploying boots on the ground to ensure that European military also gain battlefield experience of modern warfare.

In 2026, only two countries have experienced a modern war of attrition of the magnitude unseen in Europe since WW2 — Ukraine and Russia. With that regard, the EU Defence and Space Commissioner Andrius Kubilius rightly warns, "If we are talking seriously about what intelligence services are speaking about the possibility of Russian aggression, we need to understand that in such case we [the EU] or some member states will face a battle-tested Russian army. On the NATO side we do not have anybody who has such an experience. Only Ukraine has such an experience. So the question is: are we really ready to integrate Ukrainian battle-tested defence capabilities with our capabilities in order for us to become stronger?... Are we ready to build the European Defence Union?"<sup>5</sup>

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<sup>2</sup> The DELTA combat system has been deployed across all levels of the Defence Forces of Ukraine. The Ministry of Defence of Ukraine. August 6, 2025.

<https://mod.gov.ua/en/news/the-delta-combat-system-has-been-deployed-across-all-levels-of-defence-forces-of-ukraine>

A similar alarm about the growing gap between Russia's and Europe's military capabilities was made by Bohdan Krotevych, Lieutenant Colonel and Mariupol defender. In response to the article "The Bear in the Baltics: Reassessing the Russian Threat in Estonia", he stressed that while the argument is built on theoretical models, force-balance calculations, and deterrence concepts, it completely ignores the decisive factor of modern warfare: accumulated combat experience under real battlefield conditions. He points out that a vast majority of NATO members rely on exercises, staff simulations, and doctrinal assumptions that have not been tested in full-scale combat. This growing gap was demonstrated in practice during the NATO Hedgehog 2025 exercises in May 2025, when Ukrainian drone operators defeated a combined combat group of several thousand NATO troops, including British and Estonian soldiers, who were attempting to carry out a mechanized attack.<sup>7</sup>

Simultaneously with revolutionary change in the battlefield and Russia accumulating valuable battlefield experience to be able to threaten European states, recent U.S. political signals have made clear that American protection of Europe that had lasted since WW2 can no longer be taken for granted, particularly in scenarios short of direct U.S. strategic interest. This reality is now openly acknowledged in the U.S. discourse and should be treated as a structural condition regardless of the change in the U.S. government rather than as a temporary political anomaly.

The 2025 U.S. National Security Strategy defines the goals in Europe as "reestablishing conditions of stability within Europe and strategic stability with Russia"<sup>8</sup> instead of defeating Russia and bringing it to account for this unprovoked war of aggression, along with "cultivating resistance to Europe's current trajectory within European nations", or "ending the perception, and preventing the reality, of NATO as a perpetually expanding alliance".<sup>9</sup>

While many European states still see Washington as a key ally, they are increasingly assuming primary responsibility for its own defense via investing significantly more in its own rearmament and armies, along with taking over the support of Ukraine's war effort.

This period of turbulence presents Europe with both a strategic opportunity and a profound challenge. Europe does need to close its military capability gaps — but how those gaps are filled is as important as whether they are filled at all. Capability gaps must be addressed in ways that reflect the realities of modern unmanned and roboticized warfare. Preparing for the war of yesterday — through slow procurement cycles, relying primarily on conventional weapons and disregarding the ongoing tech race, allowing peacetime regulatory frameworks to constrain defense production, and prioritizing high-cost "boutique" weapons manufactured in limited numbers over mass produced cheap weapons — risks serious misallocation of resources in a very limited timeframe.

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3 NATO 2022 Strategic Concept. NATO. June 29, 2022. <https://www.nato.int/content/dam/nato/webready/documents/publications-and-reports/strategic-concepts/2022/290622-strategic-concept.pdf>

4 German chief of defence orders swift expansion of warfare capabilities. Reuters. May 25, 2025 <https://www.reuters.com/business/aerospace-defense/german-chief-defence-orders-swift-expansion-warfare-capabilities-2025-05-25/>

5 The speech of the EU Commissioner for Defence and Space Andrius Kubilius. December 13, 2025. X social network. <https://x.com/KubiliusA/status/1999902445414338977>

6 Bohdan Krotevych. December 23, 2025. X social network. <https://x.com/BohdanKrotevych/status/2003477030210253010>

7 NATO Has Seen the Future and Is Unprepared. The Wall Street Journal. February 12, 2026. <https://www.wsj.com/opinion/nato-has-seen-the-future-and-is-unprepared-887eaf0f>

Therefore, Europe's rearmament and preparing for war cannot be implemented in isolation. Ukraine should be integrated as a core partner in Europe's defense industrial and innovation base. Ukraine's battlefield has become the world's most advanced laboratory of modern warfare, generating operational lessons at a speed no peacetime institution can match. It clearly shows that the future battlefield will function as an interconnected robotic ecosystem. Ukraine brings combat-tested technologies, accelerated development cycles, and direct operational experience against Russia — capabilities that European states cannot reproduce in peacetime even if there is political will and dedicated resources.

## **BATTLEFIELD: HIGH-INTENSITY ROBOTICS WARFARE**

Between 2022 and 2026, battlefield robotics have evolved significantly, from using drones as primarily reconnaissance tools (from 2022 on) to strike assets (2023-now) and logistical lifelines (from 2024 on). Unmanned systems now shape not only firepower but also sustainment and casualty evacuation. Fiber-optic UAV and AI-enabled autonomy represent a new inflection point rapidly developing since late 2024, having reduced the effectiveness of electronic warfare and forcing a shift toward kinetic/mechanical countermeasures like shooting down with machine guns or drone interceptors, as well as development of robotic logistics and evacuation solutions.

Ukraine's experience can be roughly summarized in the following phases:

### **1. 2022 – Conventional Expectations Meet Technological Improvisation**

In early 2022, Russia invaded with significant advantages in key conventional capabilities: aviation, artillery, and armored forces. Yet Ukraine stopped and pushed back Russian advances by rapidly adopting cost-effective innovations, primarily in battlefield reconnaissance and targeting.

A defining early shift was mass use of small commercial quadcopters for reconnaissance and artillery correction, replacing older methods based on scout groups, binoculars, and limited observation points. While Russians practiced the so-called "area fire" against the areas of possible deployment of the Ukrainian military, Ukraine increasingly practiced "target fire": identifying specific enemy formations in real time with drones and rapidly transmitting imagery and coordinates to artillery units. This approach proved especially effective against mechanized assaults, allowing Ukrainian forces to detect enemy armored groups at distance, coordinate fires, warn infantry, and defeat attacks before enemy units reached defensive lines.

### **2. 2023 – The Beginning of the Drone Strike Era: From Seeing to Destroying**

By 2023, the battlefield entered the era of drones as strike weapons. While artillery remained the main firepower, UAVs' use expanded from being primarily "eyes" into becoming the "hands." Two key developments shaped this shift: the use of bomber drones (including larger platforms adapted from civilian/agricultural designs) that dropped munitions; and first widespread FPV "kamikaze" drones enabling precision strikes against military personnel and vehicles at low cost.

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<sup>8</sup>National Security Strategy of the United States of America. The White House. November 2025. Page 27. <https://www.whitehouse.gov/wp-content/uploads/2025/12/2025-National-Security-Strategy.pdf>

<sup>9</sup> National Security Strategy of the United States of America. The White House. November 2025. Page 27. <https://www.whitehouse.gov/wp-content/uploads/2025/12/2025-National-Security-Strategy.pdf>

Ukraine's ability to innovate was partially driven by necessity: slow incremental partner deliveries and limited domestic production of conventional weapons, primarily artillery ammunition, created strong incentives to seek cheaper, faster solutions with rapid iteration cycles. In reality that led to drones replacing much of traditional reconnaissance and artillery. Small, cheap drones started to see everything on the battlefield, guide artillery with lethal accuracy, drop munitions directly on targets, and even more – destroy armored vehicles that cost millions, overturning the old balance between cost, mobility, and survivability.

While Ukraine pioneered many of these approaches, Russia rapidly adopted them and scaled them up. By 2023, Russia was no longer behind in frontline reconnaissance drone use.

Moreover, this period also intensified the parallel arms race in electronic intelligence (ELINT) and electronic warfare (EW). As drone use expanded, so did the ecosystem dedicated to detecting, jamming, spoofing, interception of communications, and disrupting them. In fact, a new arms race began: the contest between drone operators and those trying to defeat drones, or a signal vs disruption duel. Drone engineers and operators continuously sought for frequencies that can survive jamming, while EW units detect those frequencies, adapt their systems, and attempt to suppress them. The cycle rapidly escalated into automation: frequency hopping, adaptive jammers, alternative transmission pathways, and increasingly complex electronic counter-countermeasures.

### **3. 2024–2025 – No More Frontline. The Kill Zone Instead**

By late 2024 and into 2025, the frontline transformed into a kill zone — an environment where any movement is visible and any target is immediately attacked. Within roughly 10–20 kilometers of the line of contact, any personnel or a vehicle is often quickly detected and targeted. Several inexpensive FPV drones worth several hundreds dollars can destroy Russian tanks costing over several millions. As of early 2025, drones were reported to inflict about 70% of all Russian and Ukrainian casualties, as per Ukrainian MP Roman Kostenko. In some battles, they caused even more — up to 80% of deaths and injuries, commanders said.<sup>10</sup>

Under these conditions infantry was still holding lines, but their ability to operate depended largely on unmanned systems and EW. Military operations were shaped by a dense layer of aerial platforms that continuously observe, identify positions, support artillery, and deliver precision attacks. The need to minimize human movement inside the kill zone was pushing logistics and certain combat functions onto robotic systems.

Tactics also changed. Russia increasingly started advancing in small groups, seeping forward under UAV guidance rather than attempting large armored breakthroughs like they practiced in 2022. Ukraine responded by building layered robotic zones aimed to degrade enemy sensors, disrupt coordination, and target logistics routes. Before infantry engagements, both sides fought extended battles between unmanned systems to set conditions and weaken the opponent's reconnaissance and sustainment. Also, in the given circumstances, decentralized, small-unit operations replaced massed formations, with traditional large formations becoming increasingly vulnerable.

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<sup>10</sup> A Thousand Snipers in the Sky: The New War in Ukraine. The New York Times. March 3, 2025. <https://www.nytimes.com/interactive/2025/03/03/world/europe/ukraine-russia-war-drones-deaths.html>

<sup>11</sup> Ukraine created three army corps. What is that and who leads them. BBC Ukraine. April 17, 2025. <https://www.bbc.com/ukrainian/articles/cqx4z2zqyxgo>

At the same time, in a broader sense, it is important to acknowledge that technological innovation did not emerge in isolation but was closely linked to broader structural changes within Ukraine's defense system. One of the avenues was the creation in 2025 of new corps-level formations on the basis of the highly capable units like the Third Assault Brigade, Azov and Khartia brigades — reflected increasing institutional trust and a willingness to delegate responsibility for operational experimentation.<sup>11</sup> These formations not only assumed significant parts of the frontline burden but also developed new operational protocols and approaches to integrating drones, electronic warfare, and other emerging technologies into combat operations.

#### **4. The Inflection Point: Fiber-Optic Drones and Emerging Autonomy**

The introduction and mass adoption of fiber-optic controlled drones (late 2024, accelerating in 2025) marked a major shift. Since they do not rely on radio-frequency links in the same way, conventional EW approaches lose much of their effectiveness against them. This marked a major shift: electronic warfare is no longer sufficient on its own.

This had critical consequences, among which were that EW and ELINT lost leverage against certain drone categories; the battlefield became even more dangerous for logistics, as supply vehicles and routes could not fully rely on jamming for protection anymore, while counter-drone defense started increasingly require mechanical/kinetic solutions (physical destruction rather than electronic suppression).

At the same time, battlefield autonomy was emerging through drones with machine vision and AI-assisted targeting: systems that can be guided into an area and then continue to acquire/strike targets even if the control link was disrupted.

These developments accelerated a shift toward robotic logistics (UGVs and heavy-lift drones to supply ammunition, food, water, and medicine to the infantry), robotic casualty evacuation in contested areas, as well as AI-assisted interceptors and automated counter-drone turrets, now being actively tested in Ukraine.

#### **5. 2026 – What's Next?**

The global implications of the technologies being tested and upgraded in Russia's war against Ukraine and then spread further are already visible in other conflicts. The ongoing war in the Middle East demonstrates that authoritarian regimes are actively learning from one another and exchanging technologies, tactics, and lessons learnt.

The latest most vivid example is the use of the Shahed UAVs and loitering munitions. The technology was developed in Iran and significantly upgraded by Russia between 2022-2025. In 2026, Iran is using these drones against the U.S., Israel and the Gulf states that do not have efficient cost-effective countermeasures yet. Upon a U.S. request, President Volodymyr Zelenskyy announced that Ukraine deployed an anti-drone team to Jordan in order to protect American bases there.<sup>12</sup> The Gulf states like the UAE, Qatar, and Kuwait have also reportedly requested Ukrainian defence industry for Shahed interceptors.<sup>13</sup>

Therefore, as described above, modern warfare is undergoing a revolution centered around the use of cheap mass-produced deadly weapons, driven by the rapid development and modernization

<sup>12</sup> Ukraine Sent Drone Experts to Protect U.S. Bases in Jordan, Zelensky Says. The New York Times. March 9, 2026. <https://www.nytimes.com/2026/03/09/world/middleeast/ukraine-shahed-drone-middle-east.html>

<sup>13</sup> UAE, Qatar, and Kuwait Have Requested TAF Industries Interceptor Drones. Militaryni. March 8, 2026. <https://militaryni.com/en/news/uae-qatar-and-kuwait-have-requested-taf-industries-interceptor-drones-2/>

<sup>14</sup> The Ukrainian Drone Industry's Next Target Is NATO Markets. Bloomberg. November 11, 2025

of new technologies, where time windows for advantages are shrinking to months instead of years and adaptation speed becomes a decisive military capability, as well as the ability to scale up production. In 2025, Ukraine’s drone production reached 4 million UAVs of different types a year to strike at Russian targets on the battlefield and deep inside the country<sup>14</sup> with the substantial capacity to increase.

In the light of the ongoing tech race, key technologies that will likely continue further development in the battle in the nearest future are expected to be:

- 1.** UGV platforms – uncrewed ground vehicles used for logistics, evacuation, reconnaissance, and fire support. Their role on the battlefield is expanding rapidly as they reduce the need for human movement in high-risk zones and enable robotic logistics under constant surveillance.
- 2.** Autonomous and semi-autonomous systems. Autonomous systems – drones and ground robots capable of navigation, coordination, and mission execution with limited human input. These systems rely on onboard sensors and algorithms to continue operating even in degraded communications environments.
- 3.** Swarm warfare. Drone swarms – large groups of relatively inexpensive drones operating in coordinated formations, often supervised by a single operator. Swarming enables saturation attacks against defenses and allows forces to scale unmanned operations beyond the traditional “one operator–one drone” model.
- 4.** Artificial intelligence and neural networks. These tools support target recognition, battlefield data analysis, mission planning, electronic warfare resilience, and coordination of multiple robotic systems simultaneously.
- 5.** As well as UAVs, EW, ELINT, drone interceptors to cripple enemy drones.

**Evolution of the Ukrainian experience: brief summary for 2022-2026**

<b>Phase of the War</b>	<b>Peculiarities of the warfare</b>
2022: Technological Improvisation	The significant advantage of Russia in conventional capabilities was undermined by the Ukrainian armed technological improvisation - primarily via using small commercial quadcopters for reconnaissance and artillery correction, targeting particular aims except for areas and zones.
2023: Drone Strike Era	The Ukrainian Armed Forces started mass use of strike drones against Russian vehicles and military personnel. The race in development of electronic intelligence and electronic warfare.
2024 - 2025: Transformation of frontline to killzone	Total change of the war tactics by both sides. As long as any movement of people and vehicles started to be easily detected, both sides changed the methods of moving and assault to be more adapted to drone attacks.

<https://www.bloomberg.com/news/features/2025-11-11/ukraine-drone-industry-targets-nato-markets>

2025: Fiber-optic drones' prime era	Fiber-optic drones non-sensitive to radio frequency changed the rules: it was not enough anymore to suppress the drone's frequency electronically but much more important to destroy the drone physically. The tendencies in logistics started to change more in non-human robotic modes. Shift towards making autonomous drones able to act based on machine vision and AI programming even if the control point is destroyed/control link disrupted.
2026: Recent innovations	Modern warfare is undergoing a revolution centered around the use of cheap mass-produced deadly weapons, driven by the rapid development and modernization of new technologies both in drone and anti-drone production. Authoritarian regimes are successful in exchanging experience and technologies between each other.

## ROBOTICS ECOSYSTEM IN UKRAINE

Since 2022, Ukraine has built a vibrant unique wartime robotics ecosystem. It includes but is not limited to:

### 1. Ukrainian soldiers as end users and the small R&D labs

One of Ukraine's responses to sustaining the tech race is R&D labs embedded in the military units. Just like many decentralized initiatives that were crucial to ensure that Ukraine prevailed in the first days and weeks of the full-scale war, the R&D efforts are also largely arising from the local level, in the form of the "frontline labs" — small, self-organized R&D centers embedded inside military units. They allow soldiers, drone operators, and engineers to iterate, repair, and prototype equipment in real time, often within hours of combat feedback. These labs have radically shortened the innovation cycle.

For example, at the level of the 108th Separate Assault Battalion "Da Vinci Wolves" within the 59th Assault Brigade of the Unmanned Systems Forces, they operate five workshops that can effectively be described as R&D labs. Of these five, three focus on UAVs (each specializing in different areas), one works on EW and ELINT, and another is dedicated to UGVs.

The UGV lab responsibilities include testing the systems that arrive at the battalion and preparing them for combat use. In practice, 100% of the systems require some form of technical modification before deployment. Sometimes these are relatively simple adjustments, such as tightening tracks or calibrating components. In other cases, more complex engineering solutions are required, including replacing communication modules or modifying elements of the drivetrain. These technical modifications are carried out by the soldiers in direct coordination with the manufacturers.

As a result, producers are continuously informed about the changes and field adaptations, allowing them to incorporate improvements into future production. Moreover, for every system

the lab prepares a technical report — referred to as a defect report — which documents the results of battlefield use and provides detailed recommendations for further improvement of the system.

## 2. Ukrainian manufacturers

Ultra-short innovation cycles lead to real-time R&D in UAVs, UGVs, EW, ELINT, AI-enabled autonomy, and overall battlefield robotics. The ability to test under extreme enemy EW, ELINT, constant UAV surveillance, and artillery fire gives Ukraine a unique knowledge base.

In practice, Ukrainian manufacturers are continuously informed about the changes and field adaptations by the military, allowing them to incorporate improvements into future production. For every system they test or use, the R&D lab prepares a technical report — referred to as a defect report — which documents the results of battlefield use and provides detailed recommendations for further improvement of the system. That allows Ukrainian producers to implement updates in a matter of days and sometimes even hours, driven by frontline feedback and wartime necessity which allows Ukraine to keep its competitiveness in the drone industry.

Such innovation and know-how in operating weapons and new systems in real war conditions and the database is the main 'currency' of Ukraine, as confessed by an MoD official, the New Europe Center research points out. They stress that innovation without testing, without being able to give real-time feedback and the ability to operate under wartime conditions loses its meaning.<sup>15</sup>

## 3. Civil society and volunteers

Ukraine's breakthrough in battlefield robotics did not come from industry alone. It was enabled by civil society organisations and charities like Dignitas Fund, Come Back Alive, Prytula Foundation, Defence Robotics and many others that are supplying the army with high-tech equipment, as well as volunteer engineering groups, and independent innovation hubs that rapidly built drone workshops, repair centres, and organize trainings for UAV/UGV operators etc. This bottom-up ecosystem delivered speed and adaptability that traditional defence bureaucracies cannot match.

For example, Dignitas Fund's main goal is to provide technological support to the Ukrainian Armed Forces. Their Victory Drones initiative, led by Maria Berlinska, trains nearly 4,000 UAV pilots a month and got recognition by NATO as a "Strategic level initiative". The Victory Robots program has so far trained 3,000 UGVs operators and helped to establish 15 UGV R&D centers as of February 2026. Dignitas Fund is also engaged in recruitment and training of female UAV/UGV operators and veterans.

Ukraine has shown that rapid innovation in robotic warfare is possible when the state, industry, and civil society work together. This cooperation has created a highly adaptive ecosystem. For Europe, the key lesson is clear: modern military innovation accelerates when it involves the entire society rather than a narrow circle of state institutions or defense contractors.

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<sup>15</sup> Defence Co-production of Ukraine: from wartime necessity to strategic industry. Leo Litra, the New Europe Center. September, 2025. [https://neweurope.org.ua/wp-content/uploads/2025/09/Defence-co-production\\_eng\\_web.pdf](https://neweurope.org.ua/wp-content/uploads/2025/09/Defence-co-production_eng_web.pdf)

# PREPARING EUROPE FOR MODERN WARFARE

Ukraine's battlefield indicates that the core logic of modern land war is changing faster than Western doctrine and procurement systems. The problem remains in the institutional peacetime speed and force design.

Many European frameworks still assume maneuver dominance by heavy platforms, survivability through armor and precision strikes, air superiority as a precondition for land success, long procurement cycles and production of the so-called "boutique," low-volume systems. But the battlefield reality showed layered drone surveillance and strike networks that may soon evolve into the swarms of drones that can work autonomously controlled by one soldier, classic armored breakthroughs becoming exceptionally difficult. A top-notch multi-million dollar platform can be easily destroyed by several cheap FPV drones with inexpensive mass systems defeating expensive, limited-quantity assets, as demonstrated during the abovementioned NATO Hedgehog 2025 exercise.<sup>16</sup>

For a while, there's been a thought floating that drones may not play as significant a role in a war involving the West as they have in Ukraine — in part because Ukraine's reliance on them is tied to shortages of other weaponry and other capability disadvantages,<sup>17</sup> de facto making drone warfare the so-called "war of the poor". This might have been true in the beginning, however, presently this assumption largely ignores the fact that Russia has accumulated huge experience of drone warfare and European states do not have effective countermeasures nor sufficient combat experience to resist it. In other words, Russia will not adapt to the war Europe is preparing to fight. On the contrary, it will exploit to the maximum the asymmetric advantage gained in the war against Ukraine.

Moreover, the global implications of the technologies being tested in Russia's war against Ukraine are already visible in other conflicts. The ongoing war in the Middle East demonstrates that authoritarian regimes are actively learning from one another and exchanging technologies, tactics, and operational lessons. Analysts have noted that the experience accumulated in Ukraine is increasingly relevant far beyond Europe. As the Institute for the Study of War observed, U.S. allies and partners in the Middle East should learn from Ukraine's years of experience defending against almost nightly large-scale Russian missile and drone strike packages, including some comprised in large part of Iranian-origin attack drones.<sup>18</sup>

In the current circumstances, European defense producers cannot realistically keep pace with this technological race without engaging directly with Ukraine. Weapons systems developed in Europe need continuous testing, feedback, and upgrades in real combat conditions. The same applies to European militaries. Without exposure to the battlefield environment where these technologies are actively used and adapted, European forces risk falling behind in understanding how modern weapons and tactics actually work.

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<sup>16</sup> NATO Has Seen the Future and Is Unprepared. The Wall Street Journal. February 12, 2026.

<https://www.wsj.com/opinion/nato-has-seen-the-future-and-is-unprepared-887eaf0f>

<sup>17</sup> Robotics industry insider says the future is one soldier backed by AI controlling swarms of drones. Business Insider. December 10, 2025.

<https://www.businessinsider.com/future-war-needs-one-soldier-controlling-many-drones-ukraine-ceo-2025-12>

<sup>18</sup> Russian Offensive Campaign Assessment. Institute for the Study of War. March 2, 2026.

<https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-march-2-2026/>

At the same time, as a country defending itself against brutal aggression, Ukraine can not afford to deploy its best operators to teach our partners' forces abroad, at the scale of the growing demand both in Europe and in the Middle East. Instead, partners should come to Ukraine to learn on the ground.

Remaining outside this innovation cycle would place European forces at a structural disadvantage. To keep pace with the rapid evolution of modern warfare, Europe must integrate more closely with Ukraine's wartime innovation ecosystem and learn from the environment where these technologies are being developed, tested, and refined every day.

Therefore, the following steps are recommended to the European states:

## **1. Building Europe's war-ready self-sustained robotics industry together with Ukraine**

European states do not have the industrial base to sustain high-intensity robotics warfare. Production is fragmented, over-regulated, and too slow for a battlefield that requires cheap high tech weapons in enormous quantities that are constantly upgraded based on the battle dynamics. Therefore, without testing in Ukraine, European systems risk becoming overpriced, outdated and under-proven, widening the gap with Russian forces. Europe can close its readiness gap only by embedding its defence innovation cycle into the Ukrainian ecosystem.

Europe cannot rapidly scale UAVs and UGVs without Ukraine's battle-proven industry; Ukraine cannot fully develop this industry without being integrated into the European defence market and getting access to extra funding. A unified Euro-Ukrainian robotics industry will be able to mass-produce UAVs and UGVs at real wartime speed – strengthening Ukraine now and preparing Europe for the next, not the previous war.

In 2026, this effort is growing. On February 8, 2026, President Zelenskiy announced that Ukraine will open 10 weapon export centers in Europe, including in Baltic and Northern European countries.<sup>19</sup> Also, for the first time, Ukrainian drones are manufactured on an industrial scale in Germany within the new "Build with Ukraine" Initiative, by the German-Ukrainian defence joint venture, "Quantum Frontline Industries".<sup>20</sup>

### RECOMMENDATIONS

- Prioritize robotics in the European rearming plans and facilitate EU-Ukraine defence cooperation in this area. That shall include heavy investment in the R&D and scaling up of production of the weapons of the future: UAV and UGV platforms, autonomous systems, robotics swarms, advanced neural networks etc. Ukrainian data, battlefield feedback, and innovation cycles could give Europe access to the world's most advanced robotic warfare laboratory.

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<sup>19</sup> Ukraine to open arms export centres across Europe. Euractiv. February 9, 2026.

<https://www.euractiv.com/news/ukraine-to-open-arms-export-centres-across-europe/>

<sup>20</sup> Quantum Systems and Frontline Robotics Open Joint Drone Production Facility in Germany for Ukraine. Militaryni. December 15, 2025. <https://militaryni.com/en/news/quantum-systems-and-frontline-robotics-open-joint-drone-production-facility-in-germany-for-ukraine/>

- Embed Ukrainian R&D and production into European defence programs like the Security Action for Europe (SAFE), ReArm Europe, EDF, Horizon mechanisms, as well as the newly approved European Defence Industry Programme (EDIP) worth of €1.5 billion and its Ukraine Support Instrument (USI) equal to €300 million, ensure funding sufficient to the scale of threats and accelerate implementation. The respective legislation that will allow utilizing the potential of EDIP instrument was adopted by the European Parliament in November 2025<sup>21</sup> and by the European Council in December 2025.<sup>22</sup> Also, as the discussions of the EDF 2.0 are ongoing, it is important that Ukraine is engaged from the start.
- Create feasible conditions for the Ukrainian industry to diversify components and invest into localisation of components production in Europe and Ukraine. The 'buy European' principle which defines that in order to get European funding the manufacturer has to ensure that the cost of their components originating from non-associated third countries cannot exceed 35% of the estimated total cost of components is an important strategic target that must be aimed for, but in practice localisation requires time while Ukraine's funding needs are pressing and immediate. Implement a 'Test in Ukraine' standard that will allow European companies to trial UAVs, UGVs, sensors, EW and ELINT in Ukraine under safe, legally supported frameworks. European companies need structured mechanisms to test drones, robotic platforms, sensors, and electronic warfare systems in Ukrainian operational conditions. This would significantly accelerate technological adaptation and ensure that European investments produce systems relevant to real battlefield environments.
- Accelerate joint ventures and split-production between Ukrainian and European manufacturers in robotics. Practical cooperation should focus on joint ventures and split-production models that allow both sides to benefit from their comparative advantages. European industry can provide capital, manufacturing capacity, and supply chain stability, while Ukraine contributes battlefield-proven designs, rapid iteration cycles, and operational testing. Under such arrangements, certain components may be manufactured in European facilities, while system integration, adaptation, and combat validation continue in Ukraine. This model would accelerate Europe's defence modernization while simultaneously strengthening Ukraine's ability to sustain and scale the technologies already shaping the battlefield.
- Ensure protection of intellectual property and technological know-how during the expansion of Ukrainian defence technologies into the European market. Ukrainian manufacturers have developed many of these solutions under extreme wartime pressure and rapid experimentation cycles. Without adequate safeguards, technology transfer risks turning into technology extraction. European integration must avoid a model where Ukrainian innovations are absorbed by larger defence corporations without fair ownership, licensing, and long-term participation of Ukrainian developers.

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21 Parliament greenlights first-ever European defence industry programme. The European Parliament. November 25, 2025. <https://www.europarl.europa.eu/news/en/-press-room/20251120IPR31493/parliament-greenlights-first-ever-european-defence-industry-programme>

22 European defence industry programme. The European Council. <https://www.consilium.europa.eu/en/policies/defence-industry-programme/>

## 2. Making European robotics independent of Chinese components

Ukraine's drone industry now produces millions of systems annually, yet the core components still rely heavily on China. The findings of the research by Snake Island and IRON show that in the production of the FPV-drone, Ukrainian manufacturers managed to localize production of certain elements like frames (covering 85% of market demand), communication systems (70% of the demand), and analog video transmitters (55%). However, dependence on imports from China remains significant for more capital-intensive segments like flight controllers, thermal imaging cameras and electric motors.<sup>23</sup>

Beijing dominates the global supply of lithium cells, microelectronics, optical sensors, navigation chips, and especially neodymium magnets — the essential element for almost every drone motor. China controls 60% of global rare-earth elements production and 90% of their refining,<sup>24</sup> leaving both Ukraine and Europe exposed.

While Chinese restrictions on the sale of drones and components to Ukraine since 2024 have been weakening the country's ability to produce drones critical to frontline operations, Russia is effectively working with China to accelerate its drone production.<sup>25</sup> The same Chinese-made batteries, sensors, chips, and magnets are embedded across European defense systems.

In response to U.S. tariffs, China introduced two waves of export controls for rare-earth elements in April and October 2025 respectively, with the second wave being suspended until November 2026. The EU has been already negatively affected by these measures.<sup>26</sup> If China restricts exports further, Europe's ability to sustain defence production and high-intensity combat would be at immediate risk.

At the level of the EU, the work towards diversification is in progress. In their paper issued in November 2025, the European Parliamentary Research Service points out that in order to reduce this dependency, the EU has adopted policies, including the Critical Raw Materials Act, which entails risk monitoring, support for strategic projects, diversifying imports and incentivising technological progress and resource efficiency. In March 2025, the European Commission selected the first batch of projects under the act, five of which – located in France, Italy, Poland and Sweden – are focused on the different stages of the rare-earth elements value chain: extraction, processing, manufacturing and recycling. The EU has also set up the European Raw Materials Alliance, which works on resilience of rare-earth magnet supply chains. In November 2025, Commission Vice-President Stéphane Séjourné announced plans to set up an EU critical minerals centre to fund and coordinate EU purchases of CRMs, set aside stocks and ingrain economic security into firms' supply chains.<sup>27</sup>

Even though the cost of production will rise, this shall be perceived as a long term investment in Europe's independence, security and sustainability.

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23 Roadmap on localization. Snake Island Institute, IRON. 2025. <https://lnk.ua/BB6aToLkF>

24 China's rare-earth export restrictions. Marcin Szczepański, European Parliamentary Research Service. November, 2025. [https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS\\_ATA\(2025\)779220\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS_ATA(2025)779220_EN.pdf)

25 Why China's UAV Supply Chain Restrictions Weaken Ukraine's Negotiating Power. Aosheng Pusztaszeri, CSIS. December 16, 2024. <https://www.csis.org/analysis/why-chinas-uav-supply-chain-restrictions-weaken-ukraines-negotiating-power>

## Recommendations

- Integrate Ukraine into respective EU initiatives aimed at localization of chokepoints (e.g. production of battery cells, navigation modules, optics, and rare-earth magnets) via EU-Ukraine co-production, shared IP, and long-term procurement.
- Accelerate implementation of European rare-earth and microelectronics initiatives, activate domestic mining projects, integrate Ukrainian manufacturers into European supply chains, deepen cooperation and partnerships on rare-earth elements with countries that meet high sustainability and human rights standards, like Canada.

### 3. Ensure constant training of people who operate and maintain robotics

The rapid expansion of UAVs and UGVs requires trained operators and technicians who can keep systems functioning under electronic warfare and constant surveillance. Ukraine developed this capacity by creating dedicated operator schools, frontline workshops, and repair labs that train soldiers to fly, fix, and adapt systems in real time literally under fire. Training schools appeared inside brigades, technical workshops became standard at frontline positions, and thousands of operators learned to fly, repair, and modify systems in real-time. This ecosystem is what allows Ukraine to keep millions of UAVs and thousands of UGVs in constant use.

Such infrastructure cannot be fully replicated outside the battlefield. Without skilled personnel and robust repair and maintenance capabilities, even the most advanced platforms — whether co-produced with Ukraine or exported from it — rapidly lose operational effectiveness. For this reason, the presence of European personnel in Ukraine is not only important for reinforcing Ukraine's defense, but also essential for European militaries to gain firsthand operational experience in the conditions of modern warfare.

At the same time, structured training cooperation can help narrow this gap. Joint training centers and institutional partnerships with Ukrainian military schools can transfer battlefield knowledge, modern tactical approaches, and the intensity of real operational environments to European forces. Another important avenue is the organization of intensive training programs for European servicemen with the participation of Ukrainian civil society organizations and charities, such as the Dignitas Fund initiative described above. These programs could provide practical skills and lessons drawn directly from the battlefield, allowing European personnel to learn from those who are actively engaged in modern high-intensity warfare.

#### RECOMMENDATIONS:

- Reconsider deployment of the European forces to Ukraine. Right now, that step is largely viewed by the European decision-makers as a possible future security guarantee after the war ends which allows indefinite postponement of making decisions. Meanwhile, deploying boots on the ground shall be viewed primarily as a strategic instrument for European own military preparedness. Participation on the ground would allow European armed forces to learn in real operational conditions and accumulate battlefield experience that Russia is currently gaining asymmetrically through its war against Ukraine.

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<sup>26</sup> China's rare-earth export restrictions. Marcin Szczepański, European Parliamentary Research Service. November, 2025. [https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS\\_ATA\(2025\)779220\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS_ATA(2025)779220_EN.pdf)

<sup>27</sup> China's rare-earth export restrictions. Marcin Szczepański, European Parliamentary Research Service. November, 2025. [https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS\\_ATA\(2025\)779220\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS_ATA(2025)779220_EN.pdf)

Without such exposure, European militaries risk preparing for future conflicts without the practical understanding of how modern high-intensity warfare is actually conducted.

- Expand Ukrainian training models and institutions to European countries. Ukrainian wartime training programs, such as those developed by Dignitas Fund, provide practical instruction based on real combat experience rather than peacetime doctrine. Establishing partnerships with such schools and integrating Ukrainian instructors into European training structures would allow European forces to benefit from the latest battlefield lessons while building long-term institutional cooperation.
- Establish national and EU-level robotics training centers dedicated to UAVs and UGVs and operations in environments contested by electronic warfare. NATO-Ukraine Joint Analysis, Training and Education Centre (JATEC) in Bydgoszcz, Poland, could also become key to this effort. These centers should be modeled directly on Ukrainian wartime training ecosystems and equipped with technical workshops, laboratories, and the necessary equipment to train operators, engineers, and maintenance specialists. Connecting European research hubs, universities, and innovation centers with Ukrainian counterparts would enable shared data, joint development, and rapid real-world validation of emerging technologies. Adopting Ukrainian standards of training intensity and practical preparation would ensure that Europe produces operators and technicians capable of functioning in the conditions of modern battlefield environments rather than purely theoretical training settings.

#### **4. Ensure sufficient funding for the development of the robotics industry and ecosystem**

In general, Ukraine's defence industry is chronically underfunded. The Ukrainian government reported that while in 2025 the overall capacity of Ukraine's defence industry has grown to \$35 billion,<sup>28</sup> according to former minister of strategic industries Herman Smetanin, Ukraine's actual weapons production amounted to around \$12 billion,<sup>29</sup> leaving a big part of the estimated potential underused.

The same year, foreign funding for Ukraine's defense industry totaled \$6.1 billion with nearly \$1.8 billion allocated under the 'Danish model,' and over \$4.3 billion was mobilized through direct procurement by partner states from domestic manufacturers to meet the needs of Ukraine's Defence and Security Forces. Contributions to Ukraine's defense industry came from the UK, Denmark, Lithuania, the Netherlands, Germany, Norway, the US, Sweden and others.<sup>30</sup> At the same time, in 2025, Ukrainian defense tech startups managed to attract nearly \$105 million from investors,<sup>31</sup> marking both significant increase compared to previous years as well as highlighting how little resources are in fact available for Ukrainian innovators and producers.

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<sup>28</sup> The Ministry of Defence secured over \$6 billion for Ukraine's defense industry in 2025. The Ministry of Defence. January 3, 2026. <https://mod.gov.ua/en/news/the-ministry-of-defence-secured-over-6-billion-for-ukraine-s-defense-industry-in-2025>

<sup>29</sup> Engineers, missile strikes and high technology: can Ukraine produce more weapons in 2026? Ukrayinska Pravda. January 4, 2026. <https://www.pravda.com.ua/eng/articles/2026/01/04/8014603/>

<sup>30</sup> The Ministry of Defence secured over \$6 billion for Ukraine's defense industry in 2025. The Ministry of Defence. January 3, 2026. <https://mod.gov.ua/en/news/the-ministry-of-defence-secured-over-6-billion-for-ukraine-s-defense-industry-in-2025>

<sup>31</sup> Ukrainian Defense Tech Startups Raise Over \$105 Million in 2025. Mezha. December 6, 2025. <https://mezha.net/eng/bukvy/ukrainian-defense-tech-startups-raise-over-105-million-in-2025/>

## RECOMMENDATIONS

- Maximize the use of available international funding allocated for Ukraine's defence needs in 2026–2027 to strengthen Ukraine's robotics and unmanned systems production. This includes instruments such as the EU Ukraine Support Loan of approximately €90 billion — of which €60 billion is designated for defence — as well as bilateral contributions from key European partners such as the UK and Norway. Channeling a significant portion of this funding toward robotics, UAV and UGV production, and joint ventures between Ukrainian and European manufacturers would accelerate scaling of technologies that have already proven their effectiveness on the battlefield.
- Facilitate both state and private investment into defence technology startups. In 2025 Ukraine–Norway defence technology partnership "Brave–Norway" was launched which allocated €20 million to support Ukrainian and Norwegian startups developing unmanned systems, cybersecurity tools, and dual-use technologies.<sup>32</sup> The initiative focuses on drone technologies, AI-enabled defence solutions, and innovations tested directly in Ukrainian battlefield conditions. Programs of this kind should be expanded significantly, creating larger funding pools and broader participation for defence startups across Europe and Ukraine.
- Support and fund Ukrainian civil society initiatives that are part of Ukraine's defence innovation ecosystem. In late 2025, Come Back Alive received a record 19 billion UAH 'donation' – which was in fact a grant from an unnamed European state government.<sup>33</sup> This experience should be significantly scaled up since charity organizations like Come Back Alive, Dignitas Fund, Prytula Foundation, and others mentioned above demonstrated how flexible, non-governmental initiatives can rapidly develop and deploy new technological solutions. European partners should support and fund such civil-society-driven innovation initiatives focused on drones, robotics, and battlefield technology development, recognizing them as an integral component of the broader defence innovation ecosystem rather than peripheral actors.
- Explore new procurement models better suited to technologies that evolve rapidly. Many unmanned and electronic warfare systems become outdated within months, making traditional stockpiling inefficient. A possible solution is the introduction of rolling procurement mechanisms through joint ventures with Ukrainian producers. Under this model, European governments could place long-term contracts with joint production facilities that could operate on six-month rolling production cycles with monthly deliveries. Early batches of systems would be returned after several months for rapid upgrades and redeployed to Ukraine, while newly produced systems replace them in European inventories. Such a continuous cycle of production, delivery, upgrade, and redeployment could allow European states to maintain relevant and modern equipment while simultaneously reinforcing Ukraine's frontline capabilities.

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32 Brave–Norway: €20M to Boost Defense Innovation Between Ukraine and Norway. Digital State UA. October 9, 2025. <https://digitalstate.gov.ua/news/tech/brave-norway-eur20m-to-boost-defense-innovation-between-ukraine-and-norway>

33 The largest donation in history. Come Back Alive Fund raised a grant worth of 19 billion UAH. Forbes Ukraine. November 19, 2025.

<https://forbes.ua/news/naybilshiy-donat-v-istorii-fond-povernis-zhivim-zaluchiv-grant-na-193-mlrd-grn-19112025-34255>

# CONCLUSIONS

Ukraine shows that modern war is increasingly fought inside fully observed 'kill zones' dominated by unmanned systems. Within roughly 10–15 kilometers of the frontline, movement is constantly monitored and quickly targeted. In this environment, drones, electronic warfare, and robotics are no longer supporting tools — they have become the backbone of combat operations. Survival depends less on armor or individual platforms and more on the ability to operate within networks of drones, sensors, and robotic systems that provide reconnaissance, strike capability, disruption, and logistics support.

This reality also requires a change in how weapons are produced and purchased. Traditional procurement systems that focus on small numbers of expensive platforms move too slowly for a battlefield where technology evolves every few months. Europe needs systems that can be produced at scale, replaced quickly, and upgraded continuously. At the same time, relying only on electronic warfare to stop drones is no longer enough. The spread of fiber-optic drones and growing autonomy means that jamming alone cannot solve the problem. Militaries will need layered counter-drone defenses that include physical interception and kinetic solutions directly integrated into frontline units.

Robotics must therefore become a normal part of military planning rather than an experimental capability. Uncrewed ground vehicles and aerial drones are already used for reconnaissance, strikes, logistics, and evacuation. Modern battles often begin with a struggle between unmanned systems — drones against drones — before soldiers even engage. European forces need to prepare for constant unmanned competition rather than occasional drone use. For democratic countries, this creates a serious challenge. Decision-making, procurement, and industrial coordination often take time. To stay competitive, European countries will need to speed up their innovation cycles through closer cooperation with allies, stronger links with the private sector, and faster integration of new technologies into military practice. Without this, authoritarian states may continue to gain the initiative in the technological race shaping modern warfare.

For Europe, the conclusion is clear. Ukraine must be fully integrated into the European political, security, and economic space, including the European Union. At the same time, Europe must deepen its presence in Ukraine. European militaries, defense industries, research institutions, and training programs should operate in close cooperation with Ukrainian counterparts on Ukrainian territory. Only through such integration — Ukraine into Europe and Europe into Ukraine — can both sides build the capabilities required for defence in the wars of the future. In this sense, Ukraine's integration into Europe and Europe's presence in Ukraine are not separate processes but two sides of the same strategic transformation required to prepare for the security challenges of the coming decades.

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