3 Main Points

Russia has massively scaled up its production of long-range drones since the full-scale invasion and is gradually improving their technical characteristics and tactics. This buildup now threatens European states, which can detect incursions but lack a cheap way to stop mass incursions. Europe must rapidly field interoperable, low-cost layered counter-drone

systems (counter-drones, EW, lasers) and back it with a clear deterrence ladder, or critical infrastructure stays exposed.

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The Asymmetric Air War

The Asymmetric Air War:

The Threat of Russian Long-range drones and Europe's Countermeasures

On the night of 9-10 September 2025, around 20 Russian long-range drones violated Polish airspace, triggering the first kinetic NATO response since Russia's full-scale invasion, with allied fighters scrambling and shooting down several intruders.

Polish officials said that many drones had entered from Belarus, and the analysis of the debris indicated that they were Gerbera decoy drones — Shahed/Geran lookalikes, designed to exhaust and probe air defences (TVN24, 2025).

To stop the intruders, NATO fighters relied on high-end air-to-air missiles: at least one drone was shot down with an AMRAAM, a rocket costing roughly $1–2 million per shot, against drones estimated at only $10,000–70,000 each (Hambling, 2025a; Anokhin & Faragasso, 2024).

The incident in Poland suggests that Russia is probing NATO's ability to detect and defeat Shahed-type long-range drones, testing reaction speed and coordination on the eastern flank. In a real confrontation, these one-way attack drones would be a strategic challenge because NATO still lacks a cost-efficient way to defeat mass raids and instead relies on fighters and million-dollar interceptors, creating a dangerous cost asymmetry for Europe's critical infrastructure.

Russian long-range drones: capabilities and tactics

Russia's development and production of long-range drones has accelerated sharply since the start of the full-scale invasion. Before 2022, Moscow fielded only about 2,000 UAVs, mostly a few expensive Intelligence, Surveillance and Reconnaissance (ISR) platforms. The war exposed these limits: Ukraine used systems like the Turkish Bayraktar TB2 effectively, while Russia lacked sufficient operational drones and rapidly depleted about 70% of its precision-missile stockpile in the first six months (Allen & Bendett, 2025; Starr, 2022). Long-range drones therefore became a cheap, scalable substitute for cruise missiles and enabled a shift from a few high-end systems to mass production of simple, expendable platforms.

Since September 2022, Russia has used Iranian Shahed-136/131 "one-way" attack drones, re-designated as Geran-1/2, to strike Ukrainian cities and critical infrastructure (Wright, 2023). In early 2023, Moscow and Tehran agreed on local production: Iran supplied designs, components, and training, while a Shahed assembly plant was built in the Alabuga Special Economic Zone in Tatarstan (Höller, 2025; Albright, Burbank, & ISIS Team, 2023).

Parallel to this, the Kremlin launched an industrialisation drive in the UAV sector. Between 2022 and 2025, around 243 billion rubles (approximately 3 billion USD) flowed into national UAV programs, involving more than 900 small and medium-sized enterprises and universities (Höller, 2025). Compressed development cycles meant new variants appeared within weeks rather than years (Allen & Bendett, 2025). Putin declared drone production a national priority, claiming 1.5 million UAVs were produced in 2024, whilst still deeming this number "insufficient" and setting the goal of making Russia a leading drone manufacturer by 2030 (Bloomberg, 2025).

By now, Russia has massively expanded its long-range attack drone production. Capacities at Alabuga have been scaled up, increasing output of Shahed-type systems roughly fivefold since 2023 (Bint & Hinz, 2025). While early 2023 saw smaller raids with around 100 drones, from late 2024 onwards, Russia has conducted coordinated mass strikes, with individual waves reportedly exceeding 800 drones, severely straining Ukrainian air defences.

Ukrainian intelligence estimates Russian monthly output in 2025 at around 2,000–2,700 Shahed-type drones (Ukrinform, 2025). Western assessments put annual capacity at about 30,000 (2,500 per month), with a potential doubling by 2026 (Bergmann & Snegovaya, 2025). In September alone, Russia reportedly fired 5,800 drones at Ukrainian targets (Novynarnia, 2025). This trend of Russia's rapidly increasing drone production capabilities illustrates an industrial warfare logic based on mass, endurance and cost superiority.

Cost asymmetry: Russia's strategic warfare

Long-range drones serve as a cost-effective alternative to expensive missiles. According to various estimates, the value of Shahed systems (Geran-1/2) is around $35,000 per unit, while the value of Iskander-M ballistic missiles stands at about $2 million and the value of Kalibr cruise missiles is approximately $1 million (Hollenbeck et al., 2025). Russia also uses relatively inexpensive decoy and reconnaissance drones with a unit price of around $10,000 to saturate defences and uncover the positions of Ukrainian radar systems and air defence

positions, further exacerbating the cost asymmetry in the Russo-Ukrainian war (Anokhin & Faragasso, 2024).

Low unit costs do not automatically make long-range drones cost-effective. Shahed-type systems hit their targets in under 10% of cases, with about 90% intercepted or failing, and they are slower and less manoeuvrable than missiles, which achieve far higher success rates. Yet combined salvos can overwhelm sensor and command systems, revealing air defences and necessitating expensive interceptors, thereby exacerbating cost issues and depleting resources.

Tactics and technologies

Russia uses long-range drones both for daily routine strikes and for large coordinated salvos. Routine attacks keep constant pressure, while mass waves saturate and misdirect Ukrainian air defences. Swarming patterns thin out defenders, while newer, higher-flying Geran variants probe radar gaps and raise penetration rates (Jensen & Atalan, 2025a). A cost-driven mix of cheap drones makes these salvos economically viable, reducing intervals between waves to only days in 2025 (Jensen, Atalan, & Tiersten-Nyman, 2025).

In parallel, Russia is upgrading both platforms and procedures. Jet-powered Shahed/Geran variants raise speed and operating altitude; enlarged fuel tanks and redesigned interiors extend range (Hambling, 2025; Army Recognition, 2025). Experts put the range of Russia's standard Shahed-136/Geran-2 drones at about 1,300-1,500 km, while newer Shahed-type variants are assessed to have a range of around 2,000 km (Jensen & Atalan, 2025b). This improves stability, resilience, and networking in contested airspace (Watling & Bronk, 2024).

The core risk is therefore mass plus learning. Quantity is supplemented by qualitative capability gains through technological upgrades and iterative tactical adaptation. The operational success rate of Russian long-range drones has risen from very low levels of around 10% at the end of 2024 to roughly 12-20%—not because Ukrainian air defence is collapsing, but because Russia is systematically improving, modernising, and refining its approach (Atalan, Tiersten-Nyman, & Jensen, 2025; Clover & Miller, 2025).

Europe's Response

Russia's massed drone tactics, originally designed to overload Ukraine's air defences, have now become a strategic challenge for Europe itself. The September 2025 episode over Poland demonstrated that EU and NATO members are exposed to the same cost-asymmetric pressures heretofore faced by Ukraine, in which low-cost drones compel high-cost interceptions. Acknowledging this shift, European governments have started to develop a layered mix of national, EU-level and multilateral counter-drone initiatives to narrow the growing cost and capability gap.

National initiatives – Counter-Drones and Lasers

Being on the immediate frontier with Ukraine and Russia, Poland and the Baltic states have invested massively in their defence over recent years. Much of this spending has focused on ISR systems designed to detect and track hostile incursions, including drones. Poland, for instance, is building a multi-layered ISR architecture stretching from radio masts to satellites as part of its East Shield (Gaszewski, 2025), while its northern neighbours are advancing a parallel initiative known as the Baltic Defence Line (Jastrzębska, 2024). These initiatives have significantly strengthened early-warning and surveillance capabilities across NATO's eastern flank – yet they remain primarily geared toward detection, not interception.

Following the Russian drone incursions into Polish territory in September 2025, the gap between detection and neutralisation became clear: over 20 incoming drones were identified, but only up to four were intercepted, i.a. using an expensive AMRAAM air-to-air missile. Most of these drones were Gerbera decoy drones, constructed from inexpensive materials such as plywood and foam (Reuters, 2025).

In response, Warsaw strengthened its counter-drone capabilities by acquiring the U.S. MEROPS system in November 2025 (Górski, 2025). Developed by Anduril Industries, MEROPS is a truck-mounted mobile unit combining radar, electro-optical and infrared

sensors with artificial intelligence to detect, track and neutralise hostile drones. It can operate autonomously, deploying interceptor drones itself or relaying targeting data to other defensive systems. Proven effective in Ukraine, MEROPS offers Poland a more economical and scalable alternative to fighter jets or missile interceptors against low-cost UAVs like the Gerbera. The system has been undergoing testing in Romania since late October 2025, with Denmark reportedly planning to acquire it as well (Burrows, 2025).

One unidentified European NATO ally is acquiring even more advanced technology in its pursuit of a cost-effective counter-drone solution – by obtaining a high-energy laser weapon. Made by the Australian firm Electro Optic Systems, the 'Apollo' laser can reportedly neutralise up to 20 drones per minute, at a cost of less than 10 US cents per shot. The system is estimated to cost approximately $83 million and is scheduled for delivery to its European buyer by 2028 (Jakes, 2025).

Belgium has also decided to invest more in anti-drone defence following UAV sightings over its major airports in Brussels and Liège, as well as over its Doel nuclear power plant in the fall of 2025 (Giordano, 2025). As a response, the government passed a €50 million budget for a 'Drone Defence Initiative' to acquire counter-drone radars, radio frequency jammers, capture-net systems, and integrated detection-to-defeat platforms. One purchase that has already been confirmed concerns the 'Blaze' system by Latvian company Origin Robotics – a specialised kamikaze drone meant to intercept and neutralise hostile UAVs (Guilbert, 2025). The use of these systems will be coordinated by the 'National Airspace Security Center' (NASC), will begin operating by January 1st, 2026, in the Beauchevin Air Base (Hess, 2025)

International Operations: Coalitions, Walls and Sentries

It is no surprise that Belgium is purchasing a Latvian anti-drone system, as the small Baltic nation has steadily developed into a specialised drone industry hub over the past few years since Russia's invasion of Ukraine. Along with the United Kingdom, Latvia co-leads the international 'Drone Coalition', established in February 2024 to coordinate both the delivery of drones to Ukraine and the acquisition of drone and counter-drone capabilities for the 20

participating countries[1] (Makulski, 2025). By its one-year anniversary in February 2025, the coalition had marshalled 1.8 billion euros for UAV deliveries to Ukraine, and in September 2025, the Latvian government opened an 'Autonomous Systems Competence Center' in Riga to support the production and delivery of drone systems to the Latvian Armed Forces (Latvian Ministry of Defence, 2025).

The Drone Coalition highlights the appetite for coordinated action on counter-drone defence in Europe – momentum that the EU is now attempting to channel into a more comprehensive, institutionalised framework of its own. In October 2025, the European Commission and the High Representative introduced the Defence Readiness Roadmap 2030, which, among others, announced the 'European Drone Defence Initiative' – essentially a renamed and expanded version of the earlier 'Drone Wall' concept. The initiative aims to develop a multi-layered, interoperable network for drone detection, tracking, and neutralisation, integrating national systems into a shared European counter-drone architecture. Building on lessons learned from Ukraine, the European Drone Defence Initiative will encourage collaborative research and development, scalable manufacturing, and the integration of civil and military uses for border security and protecting vital infrastructure. The initiative is scheduled to launch in early 2026, reach initial operational capacity by the end of 2026, and become fully operational by 2027 (European Commission & High Representative of the Union for Foreign Affairs and Security Policy, 2025) .

NATO, too, has launched its own operation in response to the Russian incursion into Polish airspace, under the title 'Eastern Sentry'. Announced on 12th September after Article 4 consultations requested by Poland, the operation foresees the policing of Allied airspace on the entire Eastern Flank, "from the high north to the Black Sea and the Mediterranean" (Kent & McKluskey, 2025). So far, confirmed assets are Danish, French, German and British fighter jets, mostly flying sorties over Poland (Rawnsley, 2025; SHAPE, 2025), as well as one

[1] For the full list of participating countries, see https://www.mod.gov.lv/en/drone-coalition-0 (last accessed: 23.11.2025).

Danish anti-air warfare frigate patrolling the Baltic Sea (Charpentreau, 2025). The operation has no declared end date and serves specifically to patrol for and potentially counter Russian incoming drones.

Russian long-range drones – a threat to Europe?

Russia's long-range drone program has created a new type of air threat for Europe: not decisive in single strikes, but strategically powerful because of scale, persistence and cost asymmetry. The September 2025 incursion into Polish airspace showed that NATO's eastern flank can detect these systems yet still counters cheap drones with million-dollar interceptors. This is exactly Moscow's coercive logic: using swarms and decoys to drain air-defence stocks, probe radar patterns and keep constant pressure on critical infrastructure as production expands and higher-flying, longer-range and jet-powered drones appear.

Europe is rolling out mobile counter-UAS systems, interceptor drones, electronic warfare and multilateral projects like the Drone Defence Initiative to build a shared defence architecture. But unless this lowers the cost of defence and raises the cost of aggression for Moscow, it will remain symbolic. Europe needs a scalable, low-cost defence architecture for mass raids and a clear deterrence ladder: each attributed incursion should trigger coordinated deliveries of long-range strike capabilities to Ukraine, while NATO retains responsibility for intercepting drones west of Ukraine.

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