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Strategic pathways for Polish-Ukrainian drone cooperation: bilateral agility or a NATO systemic approach

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Executive summary

Nearly four years after the beginning of the full scale Russian invasion on Ukraine, Poland faces a strategic decision on how to advance cooperation with Ukraine in the rapidly growing field of military drone production. The choice lies between basing this partnership on the NATO frameworks or pursuing it bilaterally. Each of the options presents specific advantages and trade-offs in terms of speed, control, industrial benefit, and strategic influence.

The strengths of pursuing such cooperation through NATO include strong political legitimacy, collective funding opportunities, assuring the compliance of technology with alliance's requirements and integration into alliance-wide mechanisms. It could also strengthen Poland's leadership within the Alliance, which is an important subject in the current political agenda. However, the NATO route would likely face bureaucratic delays, diluted industrial benefits, and dependence on consensus among allies, which could slow implementation and limit Poland's control over production and intellectual property.

Conversely, a bilateral option would imply more agility, rapid prototyping and direct industrial gains. Poland's state and private defence sectors could benefit from Ukraine's battlefield innovation, creating a strong regional production base. This format would also allow both sides to react quickly to operational needs and to potentially attract EU defence funding. However, this option comes with higher financial burdens on Poland and weaker collective deterrence value compared to an alliance-branded project.

Given these trade-offs, the paper recommends a hybrid approach: "Bilateral first, NATO later." Initially, bilateral co-production and R&D should be prioritised to generate quick and practical outcomes, to then scale and institutionalise successful projects through NATO's innovation and procurement frameworks, thus ensuring long-term standardisation and strategic integration. This dual-track strategy would allow Poland to balance short-term defence effectiveness with its broader ambition to anchor Ukraine more firmly within Euro-Atlantic structures.

Introduction and context

War in Ukraine has accelerated the evolution of drone warfare and showed the strategic importance of equipping the armed forces with unmanned aerial vehicles (UAVs). Drones became indispensable in reconnaissance, targeting, logistics, and strike operations. Because of Kyiv's extensive wartime experience, Ukraine has become one of the most innovative environments for drone development in the world. The Ukrainian defence sector is therefore able to produce a rapid cycle of field testing, adaptation, and mass deployment of such systems. Unsurprisingly, those innovations and technologies attract growing interest from various international partners seeking both strategic lessons and industrial cooperation opportunities.

The focus on unmanned and counter-unmanned systems reflects both strategic necessity and comparative advantage. Ukraine's wartime experience has made it the world's leading testing ground for drone warfare, covering reconnaissance, logistics, strike, and electronic-warfare applications. Thousands of systems have been developed, fielded, and refined under combat conditions. Poland, in turn, is expanding domestic drone production capacity and investing in integration with NATO command and sensor networks. This makes the unmanned domain the most dynamic and mutually beneficial field for joint development, so technologically mature on the Ukrainian side and industrially scalable on the Polish one.

For Poland it means a possible strategic and industrial opportunity window. Being a frontline NATO member and one of key advocates for the Euro-Atlantic integration of Ukraine, Poland is also a growing regional defence industry hub. The state-owned PGZ and private innovators such as WB Electronics are investing heavily in high-tech capabilities, including the unmanned systems.[1] Thus, bilateral cooperation with Ukraine could allow Poland to merge its production capacity, EU market access, and Ukraine's combat-proven technologies.

At the same time, NATO has taken significant steps to strengthen allied defence production and innovation with many initiatives such as Defence Production Action Plan, the NATO Innovation Fund or the Defence Innovation Accelerator for the North Atlantic.[2] There also have been some institutional steps such as the Prioritised Ukraine Requirements List (PURL),[3] launched in summer 2025 as a voluntary funding mechanism pooling Allied contributions to procure high-priority equipment from U. S. industry. It reflects NATO's broader openness to structured, production based coordination for Ukraine. Building on that, Ukraine's growing participation in NATO-led innovation and interoperability activities like joint counter-drone exercises has laid the groundwork for possible closer integration.[4]

TABLE: BILATERAL VS NATO: COMPARATIVE ANALYSIS OF DRONE COOPERATION OPTIONS
Author: Jagoda Synowiec

DIMENSION	POLAND-NATO COOPERATION	POLAND-UKRAINE COOPERATION
Decision-making speed	slow, consensus driven	Faster, more flexible
Industrial benefits for Poland	shared, limited control	higher, growth of Polish defence industry
Strategic visibility	high, multilateral legitimacy	moderate (rather regional influence)
Risk exposure	lower (collective cover)	high (unilateral exposure)
Technology access	wider (through NATO members)	restricted (dependent on pvartners)
Funding	shared within the alliance	national + possible EU support
Political value	strengthens Poland's position within NATO	strengthens Poland's position in the region (possibly)
Implementation	feasibility low	medium-high
Innovation tempo	slow	faster

Those developments and trends raise an important policy question for Warsaw: **should Poland pursue drone cooperation with Ukraine through NATO's institutional mechanisms, or act independently through a bilateral framework?** The answer would revolve around balancing a couple important notions. Strategic influence, alliance politics, and national industrial interests would play a significant role in this decision making process. The NATO path surely offers legitimacy, funding, interoperability, and potentially further NATO integration path for Ukraine. It also entails more procedurally intensive decision-making, reduced national discretion over timelines, design choices, and intellectual property. The bilateral path promises speed, agility, and economic benefit; however, it also entails higher financial responsibility and restrictions to technology access from within the alliance. How the Polish government manages this choice will shape both its defence-industrial trajectory and Poland's role as a security and industrial integrator on NATO's eastern flank.

Scenario 1. Cooperation through NATO

For Poland, this option represents a path towards long-term strategic influence within the NATO alliance, institutional leadership, and access to shared resources. From the Alliance's perspective, pursuing drone cooperation with Ukraine as a collective Euro-Atlantic project would significantly enrich the growing defence-industrial ecosystem bringing forward new, battlefield tested, cutting-edge technologies. It would serve more as a step forward in an already existing process rather than a new creation started from scratch.

1. Strategic Rationale

In the past two years, NATO has entered a period of accelerated defence-industrial cooperation. Trying to address critical production bottlenecks, fragmented supply chains, and insufficient coordination in sectors such as munitions, missile defence and unmanned systems, the Defence Production Action Plan (DPAP) was adopted.[5] The possibility of deepening defence-industrial cooperation with Ukraine within this framework would encourage cross-border cooperation, shared investments, and the pooling of innovation capacities. Those are goals that NATO has promoted over recent years and that align closely with Poland's interest in integrating Ukraine into allied defence structures.

Positioning the initiative under NATO's umbrella would serve several strategic purposes. This direction is directly aligned with the *NATO Industrial Capacity Expansion Pledge* adopted at The Hague in 2024, which explicitly calls on Allies to "enhance cooperation with Ukraine and its defence industrial base by fostering and expanding defence cooperation between Allies and the Ukrainian defence industry to the fullest extent."[6] This political commitment provides formal backing for embedding Ukraine's defence-industrial cooperation (such as drone production) within NATO's coordinated industrial initiatives. For Poland, this creates a policy window to frame bilateral technological cooperation as part of an officially endorsed Alliance effort. It would frame the partnership not just as national or regional, but more as a collective allied effort, thus strengthening the deterrence value. Such a move would link Ukraine's wartime innovation ecosystem with NATO's institutional infrastructure, accelerating the process of eventual defence integration. For Poland it would serve as a reaffirmation of its role as a bridge country connecting the Alliance industrial and strategic core with its most exposed frontier.

2. Institutional Opportunities

2.1. NATO Innovation Fund

NATO's innovation ecosystem has evolved rapidly since 2022. Four complementary mechanisms are particularly relevant for drone cooperation:

The NATO Innovation Fund (NIF) is one of the Alliance's most tangible tools for industrial and technological cooperation.[7] It was launched in 2023 as a €1 billion multi-sovereign venture capital vehicle.[8] As for November 2025, it is jointly capitalised by 24 Allied nations, including Poland, through their national innovation and development funds. Unlike traditional defence grants, the NIF operates as a venture investor, meaning it seeks early and growth-stage companies developing dual-use deep technologies. Those technologies consist mostly of commercially viable solutions that also enhance Allied defence resilience. This model combines private innovation with NATO's capability needs, which enables allies to co-invest in technologies that could be later adapted for defence purposes.[9]

Operationally, NIF functions through two complementary channels:

1. Direct investments in selected start-ups whose products align with NATO's technological priorities,
2. Indirect investments via deep-tech venture capital funds across participating member states, creating a network of investors with access to the Alliance's strategic guidance.

While it does not finance procurement or classified programmes, NIF accelerates the commercial maturation of technologies that NATO and its members may later integrate through the DPAP, DIANA test sites, or national acquisition systems.

Allied leaders adopt new NATO defence industrial pledge
Author: NATO

Technological focus areas[10] explicitly overlap with unmanned-system development:

- Artificial Intelligence and Autonomy: onboard AI for navigation, sensor fusion, target classification, and swarm coordination.[11]
- Resilient Communications and Networking: secure datalinks, anti-jamming waveforms, and low-probability-of-intercept communications enabling contested-environment UAV operations.
- Sensing and Perception: lightweight EO/IR (Electro-Optical/Infra-Red) and radar payloads, multispectral imaging, and environmental awareness for reconnaissance and targeting.
- Energy, Power and Propulsion Systems: battery technologies, hybrid-engine optimisation, and lightweight materials that extend endurance.
- Edge Computing and Trusted Silicon: compact, secure processing hardware allowing autonomous decision-making onboard the drone.
- Cybersecurity and System Integrity: encryption, authentication, and resilience against EW or cyber intrusion.
- Advanced Manufacturing and Materials: additive manufacturing for airframes and next-generation composites improving payload-to-weight ratios.

These domains collectively define the technological core of modern UAV systems, making the NIF a natural enabler for drone-related projects.

For Poland, NIF constitutes a practical path of bringing Polish-Ukrainian ventures into the NATO innovation ecosystem. Poland, already being amongst Fund's partner states, (PFR Ventures[12]), could nominate promising start-ups or joint ventures for review and connect domestic and Ukrainian innovators with NIF's investment team. A Polish-Ukrainian consortium could, for instance, propose modular investment opportunities: an autonomy-software start-up based in Kyiv, a secure-communications hardware supplier from Warsaw, and a Polish manufacturing partner within PGZ's network. Each module could attract NIF participation under the dual-use criterion.

Beyond just financing, NIF involvement would cement the project within NATO's industrial-innovation network, providing access to allied R&D partners, investors, and supply-chain mapping. It would also reduce national fiscal pressure by blending private venture capital with public-sector oversight, ensuring scalability without full government underwriting.

2.2. Defence Innovation Accelerator for the North Atlantic (DIANA)

The Defence Innovation Accelerator for the North Atlantic (DIANA) is an organisation aimed at harnessing the dual-use deep technologies for the benefit of NATO and its partners.[13] It comprises a network of accelerator sites and test centres across the Alliance that provide start-ups and innovators with access to funding, mentoring, test infrastructure, and access to end-users.[14]

Operational and technical features

- DIANA operates via Challenge Calls, which define specific defence & security problems (for example, operating in denied environments, autonomous systems, resilient communications). Innovators apply and, if selected, enrol in a multi-phase programme.
- Selected companies receive non-dilutive funding plus access to a network of over 180 test centres (as of March 2024) and 23 accelerator sites.[15]
- The test centres cover technologies relevant to UAVs/drones: autonomy, communications, sensors, novel materials, propulsion, and unmanned vehicles. For example, a June 2023 DIANA footprint list shows "AI, autonomy and communication technology" among the capability areas for Poland's 7 test sites. Beyond Poland, several DIANA centres across the Alliance offer specialised facilities directly applicable to a Polish-Ukrainian drone initiative. Estonia, Lithuania, and Latvia host centres focused on cyber, autonomy, and unmanned systems, which are particularly valuable for testing EW resilience and

Emerging Technologies
Author: NATO

counter-drone performance. Germany, Denmark, and France contribute advanced testing environments for materials, propulsion, and secure communications, supporting improvements to endurance and survivability.[16]

For Poland and Ukraine's drone-production cooperation, DIANA could provide the institutional framework through which Ukrainian prototypes are tested, validated and scaled to NATO standards. This process could be done through the already existing DIANA test centres in Poland, for example the one at Krakow's AGH University+KPT.[17]

From the Polish perspective this matters, because by anchoring the Polish-Ukrainian drone project in DIANA, Poland would gain:

- A fast-track testing and validation chain enabling the Ukrainian field-proven designs to be evaluated under allied criteria and then scaled for broader use.
- Access to NATO-end-user feedback using DIANA's liaison with defence ministries and end-users to make sure the project meets operational requirements (interoperability, EW resilience, modularity).
- Institutional credibility achieved by elevating the partnership from a bilateral industrial deal to an alliance-sanctioned innovation programme, at the same time strengthening its legitimacy and access to allied funding and procurement paths.

Operational proviso:

- DIANA is not a procurement or production agency. It accelerates and validates technologies but does not itself fund large-scale manufacturing contracts.
- Time-to-market still depends on subsequent procurement steps through DPAP/NSPA or national programmes.
- Participation requires meeting eligibility criteria (e.g., headquarters in a NATO country) and navigating challenge application cycles.
- While Poland already hosts a DIANA accelerator site, establishing a drone-specific testing and co-production hub would require tighter national coordination among military R&D institutes, defence ministry, and academia. Current plans to consolidate unmanned-systems testing within dedicated military research infrastructure[18] indicate a move toward faster certification and integration of UAVs into operational service. In practice, such a hub would shorten development cycles by enabling continuous testing, validation, and iteration of unmanned systems aligned with Armed Forces requirements.

2.3. NATO Defense Production Action Plan

The NATO Defense Production Action Plan (DPAP) is the Alliance's strategic blueprint (agreed at the July 2023 Vilnius Summit) for scaling allied defence-industrial capacity, synchronising procurement, and enhancing supply-chain resilience.[19] It rests on three core pillars: aggregating demand, addressing industrial-capacity challenges, and increasing interoperability and standardisation. DPAP's arguably strongest value lies in the fact that it creates predictable, large-volume demand for defence products. It is a missing puzzle that Poland, as an individual state, could not generate on its own.

How DPAP operates:

- Aggregating demand in practice entails the allies committing to harmonise their equipment requirements (e.g., drones, loitering munitions, reconnaissance UAVs) and issuing multinational framework contracts to provide industry with predictable large-volume orders.[20]
- The DPAP following the principles of industrial-capacity surge and supply-chain transparency, calls for visibility into production-capacity bottlenecks, securing raw materials, establishing surge manufacturing, and reducing single-supplier dependency.[21]
- Interoperability and standardisation plan obliges allies to align material standards, so that equipment produced can be used across multiple armed forces.
- All of the aforementioned processes are supervised by the Defence Industrial Production Board (DIPB) established in December 2023.[22]

Relevance for a Polish-Ukrainian drone initiative

Poland as a member country could propose a dedicated drone capability cluster under DPAP to focus on selected UAV capability areas characterised by high operational turnover, quick design iteration and strong dependence on electronic warfare resilience and software integration:

- Poland and Ukraine (through Polish industry) could coordinate multi-national procurement of drones, making them eligible for aggregated demand contracts under NATO.
- The cluster would benefit from DPAP's demand-aggregation mechanism, signalling to industry that sizeable production volumes are expected, thus incentivising investment.
- Poland could integrate Ukraine-developed drone technologies into the cluster, which under DPAP gets embedded into standardisation processes, aligning Ukrainian designs with NATO requirements (control protocols, communication security, EW resilience).
- The cluster would gain from DPAP's supply-chain resilience efforts: Polish industry could serve as manufacturing hub, with Ukrainian innovation feeding into the design and prototyping phase, thereby combining Ukrainian combat-tested systems with Polish industrial production capacity.
- NATO demand aggregation means that once a Polish-led drone cluster is recognised under DPAP, allied financing and procurement pressure naturally follow, providing guaranteed demand and stable orders that greatly reduce commercial risk for Polish and Ukrainian companies.
- For Ukraine, this mechanism is also attractive: even though procurement funds would flow through NATO and EU allies, part of the production chain (software, components, integration work) could stay in Ukraine. This ensures that a portion of revenues and industrial value remains on the Ukrainian side, making DPAP-anchored cooperation politically acceptable and economically beneficial for Kyiv.

- Once the cluster is formally recognised in DPAP terms, Poland could leverage this recognition to access allied financing and institutional support (via NSPA multinational contracts, pooled procurement). For example, NATO's recent contracts under DPAP (e.g., for 155 mm ammunition) show how the mechanism translates into real industry orders.[23]

Operational Constraints

- DPAP does not itself supply funding for R&D or production, it is a coordination framework. The actual money still comes from national budgets or industry investment. This means Poland must still provide or secure financing.

- Implementation still requires multi-national consensus and harmonisation. Even under DPAP, aligning national procurement systems, export control regimes (especially for Ukrainian tech co-production) and production certification can delay timelines.

- For drone systems especially, which involve payloads, autonomy, datalinks, and often foreign-origin components, standardisation and certification under NATO frameworks can add layers of complexity and time.

3. Political and Strategic Benefits

3.1. Legitimacy, burden-sharing, and political insulation

Choosing NATO mechanisms in the Poland-Ukraine cooperation pathway would position the initiative within a collective allied ecosystem, giving it legitimacy and political cover, rather than realistically altering its actual threat environment. Looking strategically, NATO endorsement would not affect Poland's exposure to Russian hostility as Moscow's perception of Warsaw as a significant adversary is already deeply established. The alliance umbrella could rather serve a domestic and diplomatic function, allowing Polish policymakers to frame industrial engagement with Ukraine as being a part of NATO agenda rather than a national initiative. In the Polish political landscape, this distinction matters politically, as it helps diffuse potential internal criticism from factions sceptical of continued support to Kyiv. Thus, the NATO label does not de-facto function as a shield against external risks, but more as a mechanism of internal burden sharing, providing political legitimisation. Building on that, with such ambitious and large scale projects, maintaining consensus within both the Alliance and domestic political arena is crucial.

3.2. Leadership and influence within the Alliance

Taking the lead on NATO-endorsed drone initiative would help reinforce Polish political and institutional standing, which goes in line with Polish national administration interests of Poland's role and relevance within the alliance. It is in Poland's concern to deepen its perception as the eastern flank's strategic orchestrator, moving away from the image of a traditional security consumer. Proposing a project that operationalises key NATO innovation instruments would help to fulfil that agenda, also providing Poland with a certain leverage in Alliance debates about resource allocation, technology sharing and Ukraine's future defence integration pathway. Practically, this positioning would likely translate into symbolic but institutionally visible forms of influence such as coordinating project proposals or hosting NATO innovation hubs. While the real decision-making power would remain probably unchanged, visible initiative-taking could strengthen Poland's credibility as a constructive relevant actor rather than merely a vocal advocate. Such a venture would not radically transform Poland's position within the Alliance, but it could promote its image as a reliable implementer of allied innovation priorities.

3.3. Standardisation and interoperability

A big advantage lies in the fact that all projects developed under NATO oversight automatically adhere to interoperability and certification standards, ruling command systems, data transmission, electronic warfare resilience, and cybersecurity. Those technical criteria carefully administered by the NATO Support and Procurement Agency (NSPA) and the Conference of National Armaments Directors (CNAD), constitute a path to integration within joint missions and multinational formations. From the Polish perspective, this configuration goes in line with its long-standing position supporting Ukraine's gradual NATO integration. While the current administration has placed less open emphasis on Ukraine's future membership, proposed alignment in the technological and operational sphere would still support that trajectory in a broader sense. Simultaneously, it is important to point out that NATO-led interoperability processes prioritise standardisation rather than rapid adaptation which would be a certain priority for Polish policymakers. In this sense, cooperation under NATO would strengthen long-term cooperation, leaving the short-term rapid technological gains behind.

3.4. Long-term market and export potential

Pursuing the project through NATO frameworks would present long-term market opportunities. Systems developed in line with Alliance standards could be considered within multinational procurement programmes and NSPA-managed contracts. This would situate the initiative primarily within institutional demand channels rather than open export markets. For Polish and Ukrainian producers, this model offers access to coordinated procurement and stable orders driven by capability needs of member states. In practice, market sustainability would depend not only on formal alignments but also on whether the resulting systems address specific capability gaps that allies are unable to fill through existing suppliers.

4. Structural and Operational Challenges

Despite the aforementioned advantages, pursuing cooperation through NATO comes with substantial trade-offs.

4.1. Bureaucratic stillness and slow implementation

Because of the NATO decision making process relying on consensus among 32 members, every step of any project tends to be prolonged and politically sensitive. Establishing funding mechanisms, allocating industrial roles, or approving technology often takes years. Even pilot projects under DPAP or DIANA are put through extensive legal, technical, and certification procedures. **Those mechanisms are designed more for risk management and political inclusivity than for wartime timely responsiveness.** Meanwhile, Ukraine's dynamic innovation cycle could easily outpace NATO's rhythm. This disparity may lead to losing momentum and reducing operational relevance. For Poland, the alignment with NATO's tempo would mean prioritising long-term institutional legitimacy over short-term battlefield utility.

4.2. Diluted national control and industrial dispersion

Working under NATO frameworks means sharing intellectual property, production contracts, and export rights among multiple member

states. Therefore, it also reduces the ability of Poland to channel benefits to its own industrial base. **Profits, licensing, and component manufacturing could be distributed across Western Europe, diminishing the local economic impact.** Poland's private firms might also find it harder to retain design ownership, were they involved. This issue can particularly disadvantage medium-sized companies (like WB Electronics), that rely on design control and flexible subcontracting for competitiveness. Here, the political gain comes with a trade off in a price of national industrial consolidation

4.3. Political friction among allies

Certain members, like Hungary or Slovakia have previously expressed reservations about deeper NATO-Ukraine cooperation. Their hesitation effectively would slow or even so block progress in joint projects, especially those involving sensitive technologies or dual-use components. On top of that, various countries within the Alliance have diverging national priorities, which would dilute attention and resources. Even within supportive states only, debates about defence-industrial sovereignty and spending priorities could fragment the initial support for a shared initiative. This consensus issue would extend even to innovation-focused mechanisms such as DIANA or NIF, whose project portfolios are ultimately subject to collective oversight and political approval. **For Poland, this means that the success of such a project would be completely dependent on the lowest common denominator of political consensus across the Alliance.**

4.4. Dependence on political will

The priorities of NATO change with shifts in threat perception. Such a shift in U. S. or European politics could redirect Alliance's focus away from industrial coordination with Ukraine, to for example Indo-Pacific agenda. Institutional projects like that rarely fail on technical grounds. They rather stagnate when political momentum calms down. This fragility exposes any NATO-based initiative to shifting transatlantic dynamics, which creates volatility.

5. Implications for Poland

Summarising, for Polish authorities, drone cooperation with Ukraine through NATO mechanisms would deliver strategic prestige but limited immediacy. It would be beneficial in terms of demonstrating Poland's capacity to shape alliance policy and trends, securing an important role within the Alliance. It would also contribute to long-term goals such as integrating Ukraine's defence sector into Euro-Atlantic systems and standardising production.

However, the political feasibility of such an initiative remains doubtful. **Given the requirement for collective agreement among Allies, launching NATO-endorsed industrial projects with Ukraine would come with significant delays and political resistance.** Today, there is little indication that consensus on such a sensitive subject could be reached. Anticipating further, other costs, such as time and autonomy would have to be paid if the consensus was to be reached. Implementation would likely be slow, with industrial rewards dispersed across allies. Poland would sacrifice a measure of control over production, export, and profit allocation in exchange for strategic visibility and burden-sharing. Therefore, the NATO path serves Poland's long-term institutional interests, rather than shorter-term industrial or operational needs.

Scenario 2. Bilateral Polish-Ukrainian Cooperation

The second possible approach is for Poland to pursue drone cooperation with Ukraine directly, bilaterally. In this context, "Poland" refers primarily to the actions of state authorities, like the Ministry of National Defence, and state-owned entities including PGZ. They possess the legal and financial instruments necessary to initiate structured cooperation with Ukraine's local defence industry. Private Polish companies would likely participate through contracts, technology transfers, or joint ventures, but overall direction and coordination of such projects would depend on government-level decisions. This setup gives Poland a clear command structure and the capacity to launch initiatives without the procedural impediments. It allows for a more direct alignment between political decisions and industrial execution, making the bilateral path a more practical tool of defence policy, on top of it being an industrial undertaking. This model brings speed, flexibility, and direct industrial benefit. It builds on political trust and operational complementarity that already exist between Warsaw and Kyiv and it allows both sides to act without waiting for alliance consensus. In practice, such bilateral cooperation would be most effective if limited to clearly defined capability areas, rather than covering the full UAV spectrum. The model is particularly suited to systems and enabling technologies that require rapid adaptation to battlefield conditions and benefit from Poland's capacity to scale production and sustain industrial output.

1. Strategic Rationale

Poland and Ukraine already share the same threat perception, geographical proximity, and an urgent need for scalable unmanned systems. Ukraine brings irreplaceable wartime know-how developed under constant combat pressure,[24] including rapid battlefield-driven iteration of unmanned systems,[25] advanced counter-EW solutions shaped by sustained exposure to Russian electronic warfare, and practical experience in deploying mass, low-cost attritable UAVs and UGVs at scale.[26] This expertise is reinforced by real-time combat feedback loops, software-centric integration of drones into tactical command systems, and the development of swarm and saturation tactics that cannot be replicated through peacetime R&D or exercises alone. Poland's comparative advantage lies in its potential to function as an industrial scaling and institutionalisation platform. Poland offers a stable regulatory and legal environment, access to EU funding instruments and the single market, established logistics and supply-chain infrastructure, and a sizable dual-use industrial base that can be adapted for unmanned systems production. **In this configuration, Ukraine provides combat-validated innovation and operational know-how, while Poland enables the formalisation, standardisation, and scalable production of these solutions within the EU and NATO industrial environment.**

This complementarity of roles brings operational and industrial asymmetries and turns them into concrete, long term economic and strategic benefits for both sides. For Poland, the primary benefit would be tangible industrial gains reflected by sustained production volumes, long-term procurement contracts, and revenue generation across a network of domestic companies engaged in manufacturing, integration, maintenance, and dual-use infrastructure. These economic and industrial effects would, in turn, reinforce Poland's role as a practical hub for cross-border defence-industrial cooperation within the EU. For Ukraine, the arrangement would provide stable access to EU-based supply chains, regulatory environments, and post war reconstruction markets.

Practically speaking, the bilateral model builds on already existing political and industrial stimuli. Since 2022, both governments have prioritised deepening defence ties through regular meetings, shared training, and arms production agreements. In September 2025, Polish Minister of Defence Władysław Kosiniak-Kamysz and his Ukrainian counterpart Denys Shmyhal, signed three bilateral documents specifically focused on cooperation in drone and anti-drone capabilities, research and defence industry integration.[27] The agreements were coupled with clear political declarations of support for joint initiatives between the two ministries, armed forces, and industrial sectors. These provide a mandate and an institutional framework, however, their translation into practical cooperation so far has been partial rather than comprehensive. Progress is most visible at the political level, including information exchange, and exploratory cooperation formats. Concrete industrial outcomes remain limited. To date, cooperation has mostly focused on preparatory activities, pilot initiatives, and feasibility assessments rather than sustained joint production or deeply integrated R&D.

2. Institutional and Industrial Opportunities

2.1. Intergovernmental Frameworks and the Joint Working Group on UAVs

The bilateral agreement on UAV R&D cooperation signed in September 2025 between Polish and Ukrainian Defence Ministers, serves as a main institutional channel for future cooperation.[28] Its creation pushed further the formalisation of the military-industrial partnership focused on sharing operational data, testing prototypes and developing counter-UAS capabilities.[29] Those mechanisms could evolve into a formal intergovernmental programme for drone development. That would be a standing coordination mechanism between the Polish Ministry of National Defence, and Ukraine's Ministry of Strategic Industries. Its tasks could consist of:

- Translating frontline operational feedback from Ukraine into Polish R&D and production priorities;
- Coordinating joint R&D planning and shared testing procedures across both armed forces;
- Managing industrial partnerships between PGZ, WB Group, and Ukrainian defence conglomerates such as Ukroboronprom or Ukr-SpecSystems;
- Establishing a bilateral certification path for UAVs and counter-UAS systems, enabling deployment within both militaries and later NATO alignment.

That institution would effectively mirror the logic of NATO's DIANA accelerator but at the bilateral level, which would result in offering shorter decision cycles and direct access to operational users. By solidifying the cooperation within this formal network, Poland and Ukraine could ensure that industrial initiatives align with defence capability goals, rather than rely on ad hoc commercial agreements.

Operational constraints

- Legal and procedural asymmetry meaning different procurement laws and security-classification regimes in both countries could slow the exchange of sensitive technical data and procurement approvals, especially in the beginning stages.
- Wartime institutional pressure on Ukraine's defence sector limits its bureaucratic and financial capacity for long-term planning.
- Procurement rigidity on the Polish side may not easily accommodate the rapid innovation tempo required by Ukrainian battlefield realities.
- The absence of a unified export-control structure could complicate licensing, IP management, and joint ownership of newly developed technologies, so creating a proper framework beforehand should be crucial to avoid those hurdles.
- Some governance and oversight risks also exist. They may translate into intellectual property vulnerabilities. In a wartime environment characterised by decentralised innovation, compressed decision-making, and multiple actors involved in system development, the ownership, control, and downstream use of jointly developed IP may become ambiguous. Without clearly defined IP ownership and exploitation frameworks in joint programmes, partners may face practical obstacles to commercialisation, certification, and cross-border scaling, especially in the EU context[30].

2.2. Industrial Partnerships: Beyond a PGZ-centric approach

Industrially, bilateral cooperation cannot be assumed to rest automatically on PGZ-led joint ventures. While PGZ remains Poland's primary state owned defence holding, its practical capabilities in UAV research, development and serial production remain limited. Protracted development timelines and delivery delays in programmes such as Orlik[31] and Wizjer[32] illustrate structural constraints, including limited automation or insufficient experience in rapid system iteration. These notions stand in tension with defining characteristics of Ukrainian unmanned systems development.

By contrast, the most credible existing precedent for Polish-Ukrainian cooperation in unmanned systems lies outside PGZ. The WB Group's FlyEye programme[33], which involved the transfer of production to Ukraine, demonstrated the feasibility of combining the industries of the two countries in the unmanned domain. WB Group possesses mature UAV technologies, established production lines, and a track record of exports, making it a more natural industrial counterpart for Ukrainian partners in the unmanned field. Although WB Group is formally a private entity, the Polish state retains indirect leverage through the Polish Development Fund (PFR), which holds a significant minority stake.[34] This ownership structure offers a pragmatic pathway for basing cooperation on the state level without forcing PGZ into a leading technological role. In practice, a hybrid model, combining private sector technological leadership with public sector institutional backing may prove more viable than a purely PGZ-centric joint-venture framework.

FlyEye UAS

Author: plut. Piotr Szafarski, 16 Dywizja Zmechanizowana

Operational and technical function

A structured model could follow the FlyEye example, expanding it into a formal Polish-Ukrainian industrial consortium for UAVs under government supervision. The consortium could:

- Coordinate production and component distribution, enabling efficient cross-border logistics
- Manage shared intellectual property, licensing, and export procedures to ensure clear ownership structures and revenue distribution
- Facilitate integration of Polish engineering with Ukrainian field innovation, allowing prototype improvements based on combat feedback
- Develop modular production chains, where airframes, electronics, and payloads could be produced in separate facilities for resilience and scalability
- Establish distributed and modular maintenance, repair, and training hubs in border-adjacent regions, rather than permanent large scale facilities directly at the frontier. Designed as dual-use infrastructure, these hubs would support maintenance, system integration, and operator training while remaining embedded within broader military mobility and infrastructure resilience frameworks. A dispersed, scalable, and partially relocatable model would reduce vulnerability to kinetic or hybrid threats and enhance infrastructure resilience.

Operational proviso

While the model is practical and mutually beneficial, several industrial and logistical constraints would need to be addressed:

- Dependence on cross-border logistics exposes operations to security and infrastructure risks, including drone or missile attacks.
- Managing IP rights, export controls, and licensing across two jurisdictions may lead to disputes.
- Different corporate cultures, management structures, and state oversight models between Polish and Ukrainian firms could serve as an obstacle for integration.
- Uneven accountability standards in Ukraine's defence-industrial environment could complicate contract management and financial supervision.
- Changes in government priorities or leadership in either country could alter the scale or direction of cooperation, especially if budgetary constraints arise.

2.3. Leveraging EU Financial Instruments: EDF, EDIRPA, SAFE

Technically, gaining access to EU-defence-industrial instruments for the cooperative Polish-Ukrainian projects would not be impossible. The EU has created multiple initiatives to enhance defence industrial coordination and resilience, like the European Defence Fund (EDF), the European Defence Industry Reinforcement through Common Procurement Act (EDIRPA), and the Security Action for Europe (SAFE) initiative. For Polish authorities, those instruments represent an opportunity to finance potential Polish-Ukrainian drone production initiatives, while also maintaining bilateral control and flexibility.

Operational and technical function

- European Defence Fund (EDF)[35]: Co-finances collaborative R&D, prototyping, and testing of defence technologies. Under existing regulations, only EU-based entities can apply, but Polish firms could act as prime contractors with Ukrainian partners designated as associated third-country participants or subcontractors. This model would enable early-stage co-development of dual-use technologies such as UAV navigation systems, sensor payloads, or AI-based targeting software.

- EDIRPA[36]: Provides financial incentives for common procurement among EU member states, covering up to 20% of acquisition costs for jointly purchased systems. Poland could use EDIRPA to fund bulk purchases of drones or counter-UAS systems that originate from bilateral Polish-Ukrainian production lines, effectively expanding the order base and ensuring economies of scale.

- SAFE (Security Action for Europe)[37]: Supports regional industrial cooperation aimed at scaling up defence manufacturing and improving supply chain resilience. This mechanism could finance the expansion of drone-production infrastructure in Poland's eastern regions, integrating Ukrainian suppliers into EU industrial networks through Polish-led consortia. Importantly, SAFE explicitly encourages cooperation with Ukraine and admitted Ukraine as an equal programme partner, which largely increases eligibility for joint Polish-Ukrainian projects. Therefore, SAFE unlocks additional funding streams that would not be available through national budgets. Given Poland's current fiscal constraints and little room for new defence-industrial spending, EU financing is not only advantageous, but would be necessary to launch a bilateral initiative.

TENTATIVE ALLOCATION OF SAFE PROGRAMME FUNDS

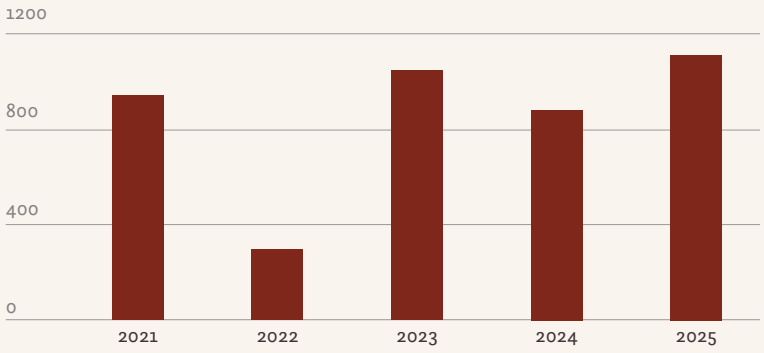
Country	Funds (Euro)
Belgium	8,340,027,698
Bulgaria	3,261,700,000
Croatia	1,700,000,000
Cyprus	1,181,503,924
Czechia	2,060,000,000
Denmark	46,796,822
Estonia	2,343,897,000
Finland	1,000,000,000
France	15,090,941,144
Greece	787,669,283
Italy	14,900,000,000
Latvia	3,497,870,000
Lithuania	6,375,487,000
Poland	43,734,100,805
Portugal	5,841,179,332
Romania	16,680,055,394
Slovakia	2,316,674,361
Spain	1,000,000,000

Source: European Commission

Operational constraints

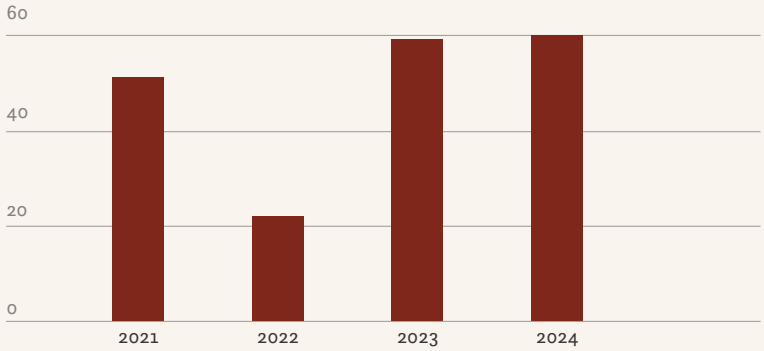
- Ukrainian entities cannot directly receive EDF or EDIRPA funds and so they must participate through subcontracting or third-country associate mechanisms, which adds administrative complexity.
- The institutional logic of EU defence funding, built around peacetime procurement and compliance models, may be difficult to reconcile with the rapid, battlefield-driven innovation cycles characteristic of Ukrainian defence development.
- EU project cycles (often 24–48 months) may not match the short innovation and deployment timelines required for operational UAV development.
- EU institutions may prioritise other consortia involving major member states (France, Germany, Italy) over smaller, regional initiatives, especially with a non-EU member involved
- EDF and EDIRPA projects require matching national contributions and significant, long lasting budgetary commitments. Despite Poland's high overall defence spending, the heavy burden of large-scale platform acquisitions and limited fiscal flexibility may constrain the ability to allocate stable co-financing for EU defence-industrial projects.

FUNDS ALLOCATED THROUGH EDF (MLN EURO)



Source: European Commission

NUMBER OF PROJECTS SUPPORTED BY EDF IN THE YEARS 2021–2024



Source: European Commission

2.4. National Funding and Procurement Mechanisms

Polish national development and industrial policy instruments provide several concrete mechanisms that could support Polish-Ukrainian industrial cooperation in the UAV domain. They operate primarily through capital investment and industrial financing, allowing projects to be established under Polish jurisdiction, reducing risk in cross-border cooperation, and enabling the scaling of production capacity.

Operational and technical function

- The Polish Development Fund[38] (Polski Fundusz Rozwoju, PFR) provides capital investment and co-financing for Polish-based industrial projects, including joint ventures or subsidiaries involving Ukrainian technology partners. Within the PFR framework, the Foreign Expansion Fund[39] (Fundusz Ekspansji Zagranicznej, FEZ) supports international expansion projects of Polish companies by co-financing cross-border investments and reducing political and operational risk. While PFR instruments generally cannot finance Ukrainian entities directly, projects legally established in Poland remain eligible, particularly in the area of dual-use or civilian UAV applications such as infrastructure monitoring, border surveillance, or emergency services.

- The Industrial Development Agency[40] (Agencja Rozwoju Przemysłu, ARP) supports the development and modernisation of industrial assets through financing[41] of production infrastructure, facilities, and selected capital-intensive investments. ARP instruments are particularly relevant for scaling physical manufacturing capacity, including assembly lines, maintenance facilities, and component production for UAV systems. While ARP does not finance R&D or software development, it can complement capital investment from the Polish Development Fund by addressing industrial bottlenecks and supporting the material base required for sustained and serial UAV production.

Operational proviso

- State development-finance instruments are designed around medium-term investment logic, which does not always align well with the very fast iteration cycles characteristic of early-stage UAV development and battlefield-driven adaptation.

- Even with new funds, Poland's ability to allocate significant funds to drone production competes with other defence priorities.

- Any cooperation involving military or sensitive dual-use UAV systems would require at least framework level involvement of the Ministry of National Defence, particularly with regard to security clearances, export controls, and compliance with NATO and national defence regulations.

- Access to military testing infrastructure and alignment with Polish Armed Forces standards would likely require cooperation with selected state-owned defence entities, even if development and production are led by private firms.

3. Political and Strategic Advantages

3.1. Flexibility and responsiveness

Bilateral cooperation introduces a direct link between Ukrainian battlefield experience and Polish industrial adaptation. Ukrainian forces deploy UAVs daily under intense conditions, generating continuous feedback on performance, vulnerabilities, and counter-measures. Structured cooperation would allow this input to be translated into design and production adjustments by Polish firms operating within a stable industrial and regulatory environment. This model is not about substituting Ukraine's own innovation capacity, but about complementing it by enabling scaling and standardisation of solutions emerging from combat use.

3.2. Concentrated economic and industrial gain

The bilateral model offers tangible (yet not immediate) industrial and economic benefits. Co-production with Ukraine would expand portfolios of Polish defence firms and stimulate subcontracting chains across the domestic industrial base. Unlike multi actor projects, bilateral ventures would concentrate profits, intellectual property and employment gains primarily within Poland and immediate partners. Additionally, success in this cooperation could strengthen Poland's reputation as a regional defence-hub and would attract potential cooperators from countries with similar military priorities and risk perception. Combining that with complementary EU instruments, in the longer term, could create an ecosystem of dual-use technologies-spanning logistics, communications and AI, that benefit military and civilian sectors.

3.3. Strategic Autonomy and Regional Leadership

Operating outside NATO structures provides Poland with greater control over timelines, export policy and technology transfer. It allows Polish authorities to pursue national and regional objectives without consensus-based constrained decision making. This autonomy would also demonstrate Poland's evolving role as a proactive regional power, initiating strategic cooperation. By leading visible defence-industrial collaboration with Ukraine, Poland might consolidate its image as the political and technological anchor of NATO's eastern flank: a state able to translate battlefield realities into industrial outcomes. Such leadership is also potentially attractive and credible for seeking potential EU or NATO funding and support, which constitutes a crucial part in the process in today's Polish defence environment.

3.4. Regional Expansion and Multilateral Scaling

Expanding the framework to neighbouring states with similar priorities and risk perception would be a natural next step in the process. **Baltic countries might be potentially interested in participating in such a venture. This joint initiative would mirror the cooperative logic of NORDEFCO, but would be adapted to the specific security environment of Central and Eastern Europe.**

4. Challenges and Risks

4.1. Financial and resource burden

While private firms (such as WB Group) have demonstrated operational production capability, a state-backed bilateral framework would require Poland to assume a greater share of long term financial commitments and risk absorption, particularly in relation to multi-year contracting, capacity guarantees, and political responsibility for cross-border cooperation. **Without the cost-sharing, financing expanded production capacity and supporting infrastructure would be difficult under current budgetary constraints. EU instruments, particularly those prioritising cooperation with Ukraine, could partially mitigate this burden, though access depends on eligibility and coordination timelines.**

4.2. Political exposure and perception

Expanding visible defence-industrial cooperation with Ukraine may increase political and reputational exposure for Poland, particularly in terms of domestic debate over costs, priorities, and long-term commitments. High-profile projects could require sustained political consensus and strategic communication, especially if cooperation moves beyond ad hoc support towards structured industrial programmes. In addition, greater industrial involvement may increase the need for enhanced protection of industrial assets and information systems against cyber and non-kinetic interference, increasing compliance and security costs too.

4.3 Demand uncertainty and scaling risk

Operating outside NATO mechanisms could bring the limitations to the ability to generate large predictable demand for jointly developed systems. Without alliance level aggregation of orders, bilateral projects risk relying on a narrower and less stable customer base, which in turn limits economies of scale and affects long term production viability.

4.4. Technology-access constraints in a long term perspective

Despite the fact that current UAV systems used in Ukraine rely largely on non-ITAR and commercially available components[42], a bilateral framework could face constraints at later stages of technological upgrading. Over time, that creates a defined ceiling for the technological level of the project. Access to certain advanced sensors, autonomy related subsystems or integrated C2 solutions would become more difficult without alignment with NATO or allied technology sharing programmes.

5. Implications for Poland

The bilateral pathway would allow Poland to act quickly and pragmatically, delivering visible results within months rather than years. The question is, whether the haste is necessary under current geopolitical circumstances. The initiative does align with Poland's ambition to build a regional competitive defence-industrial base and develop new export markets. The approach would generate direct economic value, however, with an appropriate delay, which is not directly translating into Poland's defence budget management. A visible advantage would lie in deepening operational ties with Ukraine's armed forces and tech community.

In theoretical and strategic terms, bilateral cooperation reflects industrial realism and geopolitical initiative, capitalising on Poland's proximity and political trust with Ukraine to produce tangible outcomes, while keeping the option of later institutionalisation through NATO. To summarise, the main trade-offs lie between immediacy and inclusivity – faster results and national gains versus broader alliance legitimacy and funding.

Recommendations

1. Prioritise a bilateral-first approach to maintain tempo and operational relevance

Poland should prioritise a bilateral cooperation framework with Ukraine as the initial pathway for UAV development and industrial collaboration. This choice would allow for faster political decision making, simplified governance structures and a lower procedural burden, which is critical in a domain characterised by battlefield driven adaptation. From the industrial perspective, this approach offers more favourable terms for Polish companies. It allows greater control over production location and sequencing, as well as a higher concentration of industrial value, employment and subcontracting within Poland. Early bilateral cooperation thus can lead the path, producing mature, combat tested systems that can later be scaled or internationalised through EU or NATO mechanisms.

2. Leverage EU funding as the primary financial backbone (SAFE as first choice)

Given Poland's current defence-budget constraints and Ukraine's wartime fiscal pressures, any bilateral drone-development initiative is only feasible if anchored in EU financial instruments. SAFE appears to be the most suitable starting mechanism, as it was designed as an emergency response to the war in Ukraine and focuses specifically on scaling defence-industrial capacity. To bypass the institutional deadlocks, it also operates with comparatively low bureaucratic burden. Poland is already the programme's largest beneficiary[43], which indicates strong institutional alignment and increases the likelihood of successful applications. Thus, using SAFE as the first funding layer is therefore not optional but structurally necessary. It provides the initial capital needed to invest in R&D, launch joint production lines, expand supply chains and build testing infrastructure.

3. Ensure strong anti-corruption mechanisms

For either of the pathways, Poland must ensure that cooperation with Ukraine is equipped with strong anti-corruption safeguards. This is critical for protecting public resources and for maintaining the credibility of any joint industrial project. In the NATO pathway, these safeguards are already included. Mechanisms such as NSPA procurement rules, DIANA contract oversight and DPAP transparency requirements already impose strict financial-control, auditing and compliance standards. If Poland pursues a bilateral model, similar levels of integrity are granted within EU oversight mechanisms attached to key funding instruments. EU financial mechanisms are already a condition for starting the process, thus when obtained, would grant necessary frameworks.

4. Build a "Coalition of the Willing" in Central and Eastern Europe

After establishing a functional bilateral model, Poland should expand the cooperation to selected partners, for example Baltic States, Czechia or Slovakia, who share urgent UAV capability needs. This would form a type of a Central European UAV Capability Platform, operating informally and outside NATO's consensus constraints. The functions of the Coalition would entail:

- shared testing, maintenance and production nodes,
- joint procurement packages,
- common requirement-setting for short- and medium-range drones,
- coordinated diplomatic messaging towards NATO structures

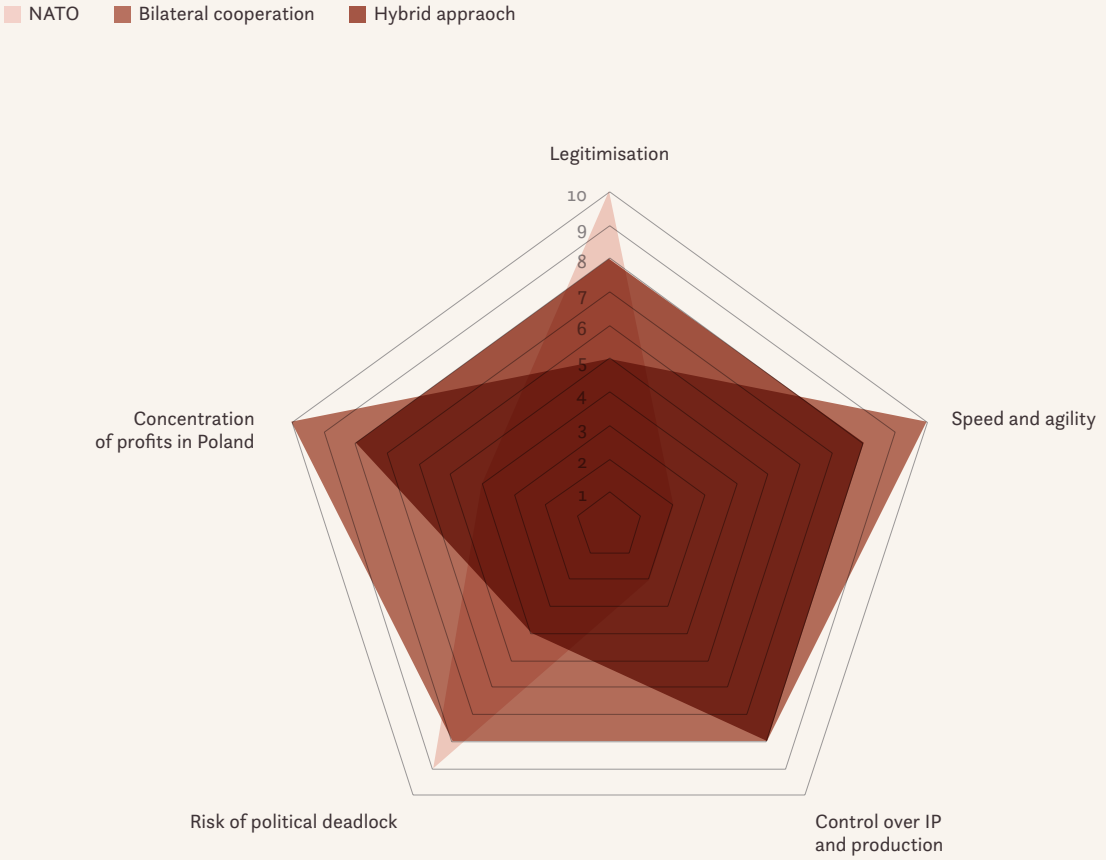
5. Gradually transition mature projects into NATO frameworks once stable

Once prototypes are validated and production is stable, Poland should channel selected systems into NATO-led initiatives, such as DPAP or NSPA. This allows Warsaw in the long term to capture legitimacy, standardisation, broader market access and greater industrial visibility with time. Therefore, NATO would be seen as the third phase after a bilateral EU grounded initiative backed by the Coalition of the Willing.

6. Balance requirements: protect tempo, secure funding, avoid bureaucratic overload

To sum it up, Poland should adopt a guiding principle: Keep what must be fast bilateral, move what must be standardised to NATO and seek funds through EU instruments. This path maximises strategic, industrial and financial benefits, while mitigating the core risks and inconveniences resulting from pure bilateral or pure NATO-based approaches.

VISUALISATION OF COOPERATION VARIANTS CHARACTERISTICS



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