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**WRITTEN BY**  
MAREK GALLO

**EDITED BY**  
PAOLA NADAL

**SUPERVISED BY**

ISABELLA HEALION AND BELÉN PADRÓN  
SALINAS

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## Introduction

The past decade's conflicts, including those in Europe and the Middle East, have fundamentally underscored the necessity of capable air and ground-based air defence. The outbreak of Russian aggression against Ukraine in February 2022 shook the European security architecture. As a result, several European countries have decided to strengthen their capabilities and overall deterrence significantly. One of the main areas of effective deterrence is a functioning air defence force, which serves as a vital pillar for the defence of states. Additionally, beyond security reasons, air defence plays a crucial role in each country's expression of sovereignty and independence, providing a form of ontological security for its citizens.

However, like most post-Soviet countries, the legacy of flawed and ineffective defence planning remains at the heart of some Central and Eastern European (CEE) countries (Young, 2023). A prime example is Slovakia's current air defence capabilities, which are nearing a critical low point. Temporarily bolstered by the assistance of the Allies, Slovakia is slowly progressing towards a new era of modern air defence capabilities. However, without concrete and immediate action, Slovakia's airspace will remain dependent on NATO's support (Dangwal, 2024) and the collective defence clause under Article 5.

Considering the "crisis" in Slovakian air defence, this article provides options for modernisation efforts, reflecting on the industry's current situation and the Slovakian Army's needs. It also outlines why air defence is necessary even for small countries like the Slovak Republic as part of a broader effort to maintain effective conventional capabilities.

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## **National Obligation? Small States in the CEE and the Necessity of Capable Ground-Based Air Defence for Deterrence**

Ensuring national security is becoming one of Slovakia's primary tasks in current geopolitical tension. While major and medium-sized states largely possess sufficient capabilities to deter their rivals, small states indirectly depend on allies and their international commitments. Considering Russia's increasingly assertive foreign policy behaviour, several experts have expressed that if small European nations want to be effective in their defence, they should adopt a non-confrontational approach that relies on asymmetric warfare and guerrilla forces (Fabian, 2020). An example often cited for this purpose is the action of Hezbollah or Al-Qaeda against a force with overwhelming superiority (Kaufman & Schroefl, 2014). However, within the European security architecture, such an approach makes little sense, as it would, in practice, only provide short-term solutions while severely compromising effective defence planning for individual small states.

Instead, like others, small states should strive to build their capabilities as effectively as possible to increase the deterrence effect against potential adversaries. Slovakia's membership in NATO and its defence clause 5 enhances the overall deterrence of the Slovak Republic while also constituting one of the pillars of Slovakia's motivation for joining the Alliance (Vidal, 2023). Building the capabilities of small states demonstrates solidarity within NATO and also confirms smaller states' contribution to the larger collective defence system. This reinforces the burden-sharing principle for other European states (Verhaeghe, 2020).

A specific focus area for small states is the securing of the air domain, which plays a vital role in defence planning for deterrence and domestically towards their populations. Systematic steps towards a functioning air defence are now a necessity, especially for countries such as Slovakia. Regardless of political affiliation or ideology, every government is responsible for protecting its citizens. This is the government's oldest and most essential duty. In the twenty-first century, governments must ensure their national airspace is effectively monitored and defended against possible aerial threats (Saab, 2024).

### **The Current Situation of Ground-Based Air Defence in Slovakia**

The legacy of the Soviet-minded defence planning left Slovakia with ineffective capabilities across various domains. In the early 90s, the Slovak Army had six long-range, 19 medium-range, and over 200 very short-range/man-portable surface-to-air missile systems of Soviet origin. Three decades later, following Slovakia's accession to NATO in 2004, the arsenal comprised 1x long-range S-300 PMU system, 4x medium-range 2K12 KUB systems, and 54x man-portable 9K38 Igla systems (MOSR, 2023).

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After the outbreak of aggression in Slovakia's neighbourhood — and as an expression of solidarity with the neighbouring country — the previous government sent the S-300 long-range system of Soviet origin to Ukraine due to a lack of spare parts and personnel for maintenance on the side of Slovakia (Brezáni, 2022). At the same time, this shipment caused a wave of uproar on the domestic political scene, as the opposition saw the move as weakening defence capability (Šníd, 2022).

The current state of air defence is potentially the worst since its independence in 1993. Fortunately, the problem is solvable, and the procurement of 17 pieces of ELTA radar systems from Israel in 2021 kick-started the modernisation process (IAI, 2021) and 14 units of the most advanced F-16 Block 70 fighter jets (MOSR, 2023). At the same time, until recently, Slovakia hosted four Patriot batteries, which came as part of the effort to strengthen the Alliance's eastern flank. Patriots were then temporarily replaced by Italian systems Mamba, whose withdrawal occurred this year (Serohina, 2024).

In 2023, two MANTIS systems worth EUR 120 million were added to the Slovak Republic's air defence (Domingo, 2023). This acquisition was the most recently completed one, bringing a particular improvement but still not providing sufficient capabilities to protect Slovak airspace effectively (Dóka, 2023a). Another problematic factor is the end-of-life cycle of several outdated Soviet systems, which, in case of renewal, can be modernised in Visegrad countries or require Russian spare parts which are no longer unavailable (Dóka, 2023b). Thus, as things stand, Slovakia is projected to lose its remaining short-range capability by 2025 and medium-range capability by 2027. In practice, this would mean the loss of the total firepower of ground-based air defence systems (MOSR, 2023b). Slovakia thus faces an inevitable and urgent need to modernise its air defence, which will require a coherent acquisition plan and integration into the functioning of its army and interoperability within the Alliance.

## **Modernisation Efforts**

In line with the argument for enhanced deterrence, Slovakia pursues replacing its outdated soviet air defence capabilities to effectively protect against aerial threats. The former interim government initially started the modernisation plan for air defence capabilities, which followed an acquisition of Israeli radars by the Slovak government in 2021. The modernisation project for air defence is divided into four phases, with the first phase focusing on procuring medium and short-range systems.

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Three additional phases of air defence system acquisitions are planned over the next decade, including defence against unmanned aerial vehicles (UAVs).

Options for MRSAMs include Israeli Barak MX and Spyder, German IRIS-T, and Norwegian NASAMS, while VSHORAD/MANPAD options include Stinger, Piorun, RBS-70 NG, Mistral 3, and Chiron (MFSR, 2023). The General Staff preferred to procure 3x Barak MX system and 36 Piouruns for their effectiveness and acquisition costs (TASR, 2023). The former Ministry of Defence predicted the decision to move forward with the Israeli alternative when it purchased 17 ELTA radar systems in 2021. The previous interim government already authorised this first phase of procurement. Considering the urgency of the modernisation and financial constraints, a temporary solution could be extending the functionality of soviet systems. However, there is a considerable risk related to the chemical stability of its pyrotechnical parts. Initially, the approved path included procuring one battery of the Barak MX system, including three launchers with eight missiles each, totalling a capital investment of 128 million EUR (Smisek, 2023).

Another option for the Slovak MoD is to pursue joint procurement through the European Sky Shield Initiative, which Slovakia joined at its inception (Dóka, 2023). However, the project for an integrated pan-European air defence remains, for now, primarily a political discussion. Until recently, procuring Patriot systems was also considered. The current Slovak Defence Minister, Róbert Kaliňák, advocated this idea (RTVS, 2024). However, these systems were eventually ruled out due to their long delivery times

An alternative is to participate in the joint procurement of Israeli Spyder systems, an option in which Belgium, Bulgaria, the Czech Republic, Hungary, Poland, and Romania have also expressed interest (Tarociński, 2023). Forming a broader coalition for the joint procurement of this system would likely be one of the most effective solutions for Slovakia. Moreover, the estimated cost of acquiring three launchers, each with eight missiles, is only slightly more than EUR 20 million higher than the cost of the Barak MX system. Slovakia's participation in joint procurement could further reduce this amount even more.

The Minister of Defence (MoD) R. Kaliňák announced new information on the modernisation of air defence on 28 August 2024. Surprisingly, the current MoD decided to purchase six Israeli Barak MX batteries instead of one, as initially planned. The estimated price for this purchase is over 560 million euros, which means that one battery is €30 million cheaper than the original offer (Tomáš, 2024). The sudden change in numbers is mainly due to political factors, where the current government has more legitimacy for large acquisition projects than the previous interim government (TASR, 2024). The first deliveries are scheduled for early 2025. The price may be affected by the decision on which missiles will be selected for the Barak MX systems, with the Slovak government indicating an interest in the extended range versions (over 35km) and a willingness to participate in their production process (Tomáš, 2024).

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Reflecting the current challenges and security environment, purchasing six Israeli Barak MX systems appears to be an effective and vital option for ensuring the modernisation of the Slovak skies. However, implementing the overall modernisation requires more warming up short and long-range systems as well as the gradual integration of new F-16 air capabilities.

## Conclusion

Given the deteriorating condition of the Slovak Army's current air defence systems, which are at the end of their life cycle and cannot be upgraded due to a lack of spare parts from Russia, urgent modernisation is necessary to restore and replace this capacity. Some progress has been made with acquisitions such as MANTIS systems, ELTA radars, and F-16 Block 70 fighters. However, additional acquisitions are required to establish a fully functional air defence system, according to the modernisation plan (MOSR, 2023a). The first phase involves acquiring short-and medium-range systems, followed by the complement of long-range systems and radar platforms.

Currently, Slovakia's limited air defence capabilities increase its dependence on assistance from NATO member states, which have been compensating with the deployment of Patriot systems as part of the Alliance's eastern flank reinforcement. With their withdrawal, Slovakia remains critically vulnerable and reliant on allied support, including civilian air policing, which is temporarily covered by Visegrad Group countries. While the principle of collective defence under Article 5 theoretically serves as a final deterrent, this has been questioned by representatives of the current Slovak government. Given the geopolitical tensions in Europe, particularly after Russia's aggression against Ukraine, modernising Slovakia's air defence is a matter of national security and an expression of sovereignty and commitment to NATO (Saab, 2024). Modernisation efforts must balance financial constraints with the urgency of acquiring effective, interoperable systems.

Regarding the options under consideration for medium-range system procurement, the acquisition of Barak MX systems appears to be a viable choice. It represents the most cost-effective option among the selected offers while providing sufficient firing effectiveness. However, its integration into the broader European air defence infrastructure is uncertain, as Slovakia would be the first NATO member to deploy such a system if acquired. The second-best option is to join a coalition of states (Belgium, Bulgaria, Czech Republic, Hungary, Poland, and Romania) considering the purchase of Spyder systems. Joint procurement could offer Slovakia a more favourable purchase price compared to the Barak MX systems. Nevertheless, the systems will likely be sourced from Israel, as indicated by the Slovak government's previous purchase of ELTA-compatible systems in 2021 (Dóka, 2023).

To conclude, Slovakia's overreliance on both NATO and Russia in the past significantly influenced its air defence capabilities, which are now being replaced by new systems through modernisation efforts. However, this long-term process is going to be costly and faces several challenges stemming from both the geopolitical context and the domestic system. In the end, in case of the successful realisation of the proposed pathway, Slovakia will become at the same time significantly more secure and contribute to NATO's overall deterrence.



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