SecureBlackSea

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THE ROLE OF THE DEFENSE INDUSTRY AND THE EVOLVING TECHNOLOGIES IN BLACK SEA SECURITY AND POLICY-MAKING

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Introduction

The Russia-Ukraine war has transformed the Black Sea into an arena of modern maritime conflict, affecting regional security. Previous Russian naval dominance has been challenged by Ukrainian drones, precision strikes, and distributed warfare, highlighting the growing importance of unmanned systems, industrial resilience, and multi-domain operations. As a result, regional NATO members -Türkiye, Romania, and Bulgaria- have accelerated modernization and defense-industrial adaptation while strengthening deterrence and interoperability. The conflict demonstrates that maritime power now depends not only on fleet size but also on technological innovation, supply-chain capacity, and alliance coordination. Thus, NATO must adapt its doctrine, procurement, and infrastructure protection to evolving hybrid and maritime threats in the Black Sea region. This brief examines how the transformation of warfare in the Black Sea is reshaping the relationship between security policy, defense-industrial capacity, and emerging military technologies. Focusing on the operational lessons of the Russia–Ukraine war and their implications for the littoral NATO members, it assesses the growing significance of unmanned systems, precision-strike capabilities, resilient industrial ecosystems, and multi-domain integration in regional deterrence. Particular attention is given to Türkiye's strategic position, alongside the adaptation requirements facing Romania, Bulgaria, and NATO more broadly. In doing so, the brief aims to identify policy and capability priorities for strengthening deterrence while preserving long-term stability in the Black Sea.

Abstract

The Russia-Ukraine war has transformed the Black Sea into a central arena of modern maritime conflict, challenging previous Russian naval dominance through Ukrainian drones, precision strikes, and distributed operations. This brief examines how these developments are reshaping regional security, defense-industrial capacity, and emerging military technologies. Focusing on Türkiye, Romania, and Bulgaria, it assesses the growing importance of unmanned systems, resilient supply chains, multi-domain integration, and NATO interoperability. It argues that maritime power now depends not only on fleet size, but also on innovation, industrial resilience, and alliance coordination, requiring NATO to adapt deterrence, procurement, and infrastructure protection.

The Black Sea as an Emerging Theatre of Maritime Contestation

First, the war has fundamentally altered the region's military geography. Russia initially sought to consolidate maritime dominance in the Black Sea through its Black Sea Fleet (BSF), which, connected to its naval base in annexed Crimea, had been undergoing modernization since the mid-2010s. The BSF took delivery of six Project 636.3 Improved Kilo class submarines, three Project 1135.6 Admiral Grigorovich class frigates, as well as Project 21630 Buyan-M and Project 22800 Karakurt class corvettes, all capable of firing the Kalibr land attack cruise missiles.

Russia also deployed several batteries of S-300 and S-400 long-range air defense systems to Crimea (Delano 2024). Yet sustained Ukrainian strikes using anti-ship missiles, long-range aerial drones, and increasingly sophisticated unmanned surface vessels (USVs) have degraded Russian naval assets in the Black Sea and forced redeployments to the east of the region, particularly the Novorossiysk naval base. As of early 2026, around 30% of the Russian Black Sea Fleet's combat assets had been destroyed or seriously damaged, mostly by USV attacks (Dura 2026). This operational evolution confirms broader assessments of Russian force design limitations and adaptability under wartime stress. According to Kofman and Lee, Russia's poor performance in Ukraine is rooted not just in planning failures but in fundamental force design flaws; a military optimized for short, high-intensity wars but unsuited for prolonged, large-scale conflict and occupation.

Key issues include insufficient manpower (especially infantry), weak combined-arms capability, and structural trade-offs that prioritized a smaller professional force over sustainability, leaving Russia unable to hold territory or adapt once effective initial plans failed (Kofman and Lee 2022). Sea control in the Black Sea is therefore no longer determined solely by fleet tonnage but increasingly by precision-strike networks, distributed unmanned systems, and resilient command-and-control architectures (IISS 2023).

Second, new forms of threat have altered the maritime risk environment. The employment of USVs against high-value naval targets has demonstrated how relatively low-cost, attritable platforms can impose disproportionate strategic costs, reflecting wider trends in contemporary naval warfare (IISS 2023). For example, aerial drones have extended operational reach against port infrastructure and logistics hubs, while mine warfare, whether deliberate or incidental, has endangered commercial shipping in the western Black Sea (Atlantic Council, 2023). Attacks on civilian vessels and the weaponization of maritime corridors have further blurred the boundary between military and economic warfare, affecting global food security and trade flows (Wezeman et al. 2023). These developments, taken together, erode freedom of navigation and introduce chronic instability into regional maritime governance.

Türkiye's Strategic Position: Naval Capability, Industrial Autonomy and the Montreux Framework

For Türkiye, Black Sea security intersects directly with its expanding defense-industrial base. Indigenous production of naval platforms, unmanned aerial systems, and missile technologies enhances strategic autonomy and strengthens deterrence posture. Ankara's implementation of the Montreux Convention, closing the Straits to belligerent warships, was a legal-political decision, but its credibility rests on substantial naval capability and domestic industrial capacity. More broadly, Türkiye's balancing approach in the Black Sea reflects a synthesis of alliance commitments and regional stabilization priorities. In this context, defense-industrial policy is not merely an economic policy but a core instrument of strategic positioning.

Romania and Bulgaria: Modernization, Allied Reinforcement and European Industrial Integration

Romania and Bulgaria, although more dependent on allied support, have intensified modernization efforts in response to heightened threat perceptions. NATO's enhanced forward presence and strengthened eastern flank posture provide a framework for these initiatives (NATO 2023). At the same time, Bucharest and Sofia increasingly situate their procurement and modernization strategies within broader European industrial integration efforts, consistent with emerging EU defense-industrial policy debates (Fiott 2023). Thus, the linkage between NATO deterrence and European industrial resilience has become particularly visible in the Black Sea theatre.

NATO Adaptation in the Black Sea: Deterrence, Infrastructure Protection and Multi-Domain Readiness

NATO's maritime posture in the region remains structurally constrained by the Montreux regime, yet the Alliance has expanded intelligence-sharing, air policing, and missile defense integration along its eastern flank (NATO 2023). For example, in May 2024, NATO established a Maritime Center for the Security of Critical Undersea Infrastructure. NATO subsequently launched Operation Baltic Sentry in January 2025 to monitor critical infrastructure using frigates, maritime patrol aircraft, and drones. In September 2025, in response to rising airspace violations, NATO launched Operation Eastern Sentry a multi-domain activity to enhance vigilance along the entire eastern flank. Additionally, the NATO Air Policing mission in Romania saw rotational deployment of allied air force fighters to increase presence in the air domain

(NATO 2025). Lessons drawn from the Black Sea regarding drone warfare, distributed lethality, and hybrid coercion are feeding into broader doctrinal discussions across the Alliance (IISS 2023).

The Black Sea conflict has pushed NATO to rethink naval and joint doctrine, shifting away from reliance on a few high-end platforms toward more distributed, resilient, and cost-effective force structures. Key lessons include the rise of drone warfare, enabling 'democratized' sea denial, where low-cost unmanned systems can impose disproportionate damage on expensive naval assets, driving concepts like 'mesh fleets' and faster, software-driven adaptation cycles. The conflict has also validated distributed lethality, highlighting the importance of land-based anti-ship systems, cross-domain fires, and dispersed logistics to reduce vulnerability and complicate enemy targeting. At the same time, Russia's use of hybrid or gray zone tactics, targeting critical infrastructure, manipulating maritime access, and leveraging information operations, has underscored the need for enhanced infrastructure protection, attribution capabilities, and societal resilience. Overall, these lessons are steering NATO toward a more networked, flexible, and multi-domain approach to deterrence and warfare (Slusher 2025). The density of military and civilian maritime activity increases the risk of escalation, while integrating dual-use infrastructure into military targeting cycles complicates crisis management (Atlantic Council 2023).

Policy Priorities for a Resilient Black Sea Security Architecture

Strategically, the Black Sea is evolving into a hybrid security ecosystem characterized by technological acceleration, industrial competition, and adaptation of alliances. The Russia–Ukraine war has exposed structural vulnerabilities in regional security architecture while simultaneously catalyzing innovation and doctrinal revision (Tsygankov 2023). For Türkiye, Romania, and Bulgaria, the policy challenge lies in aligning defense-industrial development with deterrence objectives, enhancing NATO interoperability without undermining regional stability mechanisms, and institutionalizing lessons learned from a conflict that is redefining maritime warfare. The future of Black Sea security will depend not only on political outcomes but also on sustained technological adaptation and industrial resilience.

For NATO countries, these dynamics require concrete policy and capability adjustments. First, there is an urgent need to institutionalize the 'distributed maritime denial' model by investing in scalable unmanned systems (USVs/UUVs) and integrating them into standing naval forces rather than treating them as experimental capabilities. This requires not only procurement but also doctrinal integration, command-and-control standardization, and the development of counter-USV doctrines, including electronic warfare and layered defense architectures.

Second, NATO should prioritize establishing a Black Sea-focused industrial coordination mechanism, akin to emerging EU joint procurement initiatives, to ensure rapid replenishment of critical munitions, such as anti-ship missiles, air defense interceptors, and loitering munitions. Without sustained production capacity and supply-chain resilience, deterrence credibility will remain fragile.

Third, allied nations should enhance cross-domain integration by strengthening the linkage between land-based strike systems, maritime assets, and airpower within a unified operational framework. The Black Sea has demonstrated that sea control can no longer be understood purely in naval terms; rather, it emerges from the interaction of multi-domain fires and networked ISR (Intelligence, Surveillance, Reconnaissance) systems. In this context, expanding joint exercises focused specifically on Black Sea scenarios, incorporating drone swarms, hybrid threats, and critical infrastructure defense, would significantly improve readiness.

Fourth, NATO must deepen its focus on protecting critical maritime infrastructure, including ports, undersea cables, and energy assets, by developing dedicated surveillance networks and rapid-response units. Real-time intelligence-sharing mechanisms and public-private partnerships with infrastructure operators should complement the establishment of specialized coordination centers.

Finally, NATO countries should adopt a more flexible regulatory and acquisition framework to accelerate innovation cycles. The Ukrainian case illustrates the strategic advantage of rapid adaptation and battlefield-driven innovation, which traditional procurement systems often fail to match. Introducing fast-track acquisition channels, supporting dual-use startups, and enabling closer collaboration between military operators and industry will be critical. At the strategic level, maintaining alliance cohesion while accommodating regional specificities, particularly Türkiye's unique legal and geopolitical position under the Montreux Convention, will be essential for ensuring both deterrence effectiveness and long-term stability in the Black Sea.

Conclusion

In conclusion, the Black Sea has become a critical test case for the future of maritime security, where defense-industrial resilience, technological adaptation, and alliance coordination are increasingly inseparable. The war in Ukraine has demonstrated that deterrence and sea control can no longer be assessed solely through conventional naval force structures or the numerical balance of major platforms. Instead, they increasingly depend on the capacity to develop, produce, integrate, and counter unmanned systems, precision-strike capabilities, resilient surveillance networks, and rapidly adaptable command-and-control architectures.

Against this background, this brief contributes to the analysis of Black Sea security by linking operational developments in the maritime theatre with the underlying industrial and technological capacities that enable strategic effect. It highlights how Ukraine's innovative employment of

unmanned systems, Russia's continuing reliance on missile and drone production, and NATO's evolving posture collectively illustrate the growing centrality of defense industry policy to regional security. It also draws attention to the distinctive position of the Black Sea NATO members, particularly Türkiye, whose naval capabilities, indigenous defense-industrial base, alliance commitments, and responsibilities under the Montreux Convention place it at the intersection of deterrence and regional stability.

We argue that a credible long-term security approach for the Black Sea requires not only military reinforcement, but also sustained industrial capacity, faster innovation and procurement mechanisms, improved protection of critical maritime infrastructure, and alliance adaptation sensitive to the region's legal and geopolitical particularities.

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SecureBlackSea

The Black Sea region has long been a focal point of geopolitical competition, shaped by historical rivalries, strategic interests, and evolving security dynamics. In recent years, the region has witnessed growing instability due to escalating tensions, hybrid threats, and the ongoing war between Russia and Ukraine. These developments have not only disrupted regional security but have also posed broader challenges to the European and transatlantic security order. Given NATO's strategic interest in the region, a comprehensive reassessment of security frameworks is necessary to address emerging threats and enhance regional stability.

SecureBlackSea seeks to examine and propose a future security architecture for the wider Black Sea region, aligning with NATO's evolving strategic priorities. Through an in-depth analysis of existing security structures, regional conflicts, and cooperation mechanisms, it aims to provide evidence-based insights into key threats and potential policy responses. A particular focus will be placed on the intersection of conventional military threats, hybrid warfare, economic security, and geopolitical rivalries, recognizing the complex and multi-dimensional nature of regional security challenges.

The project activities include expert workshops, field research, and data-driven assessments. It will evaluate the effectiveness of existing regional security frameworks and NATO's role in shaping stability in the region. In collaboration with policymakers, security experts, and academic institutions, the project team will facilitate policy dialogues and strategic foresight discussions to identify pathways for strengthening regional security cooperation. These efforts will result in the development of comprehensive policy recommendations aimed at enhancing institutional resilience and fostering a more cooperative security environment.

The expected outcomes of this initiative include a thorough assessment of regional security threats, a set of actionable policy recommendations, and strengthened dialogue between NATO and regional stakeholders. By producing analytical reports and policy briefs, the project will contribute to an informed security discourse and provide practical solutions for mitigating risks in the region. By fostering collaboration between academic and policy communities, it will support long-term strategic planning and resilience-building efforts.

SecureBlackSea aspires to provide a timely and in-depth examination of the evolving security landscape in the Black Sea region. It will offer insights that can guide NATO's strategic engagement in the region. Thus, it aims to contribute to a more stable, secure, and cooperative Black Sea security environment in the face of emerging geopolitical complexities.

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