## IMPACT OF MARITIME PIRACY ON UKRAINE'S ECONOMIC AND ENERGY SECURITY

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This paper explores the growing threat of maritime piracy and its implications for Ukraine's economic and energy security, particularly in the context of the ongoing war and shifting global trade routes. As a country highly dependent on maritime exports and energy imports, Ukraine faces heightened vulnerability to disruptions in international shipping lanes, especially in the Black Sea and surrounding regions. The study highlights how maritime piracy, both traditional and hybrid (including state-sponsored actions), undermines supply chain stability, increases insurance and freight costs, and threatens critical energy transit. The research underscores the need for a coordinated maritime security strategy that includes international cooperation, naval modernization, and legal frameworks to protect Ukraine's economic interests at sea.

Maritime piracy has been widely analyzed in global security studies, with researchers such as Martin Murphy (2009) and Brandon Prins (2011) noting its evolution from conventional criminal acts to complex geopolitical tools. The economic dimensions of piracy are discussed by Bueger (2015), who emphasizes its impact on trade flow and energy infrastructure.

In the context of Eastern Europe and the Black Sea region, scholars such as Volodymyr Dubovyk and Oksana Grytsenko have drawn attention to the hybridization of piracy, where state or quasi-state actors engage in maritime disruptions for strategic gain. Ukrainian maritime security experts like Andrii Klymenko have documented specific cases of maritime aggression in the Black Sea post-2014, particularly russia's unlawful interference with merchant and energy vessels.

These studies provide a foundation for understanding how maritime insecurity not only affects global trade but also represents a direct threat to Ukraine's post-war economic recovery and energy diversification.

This study utilizes a mixed-methods approach, combining geopolitical risk analysis with economic modeling and qualitative case studies such as geopolitical analysis (assessment of maritime security trends in the Black Sea region using reports from international maritime organizations (e.g., IMB,

BIMCO) and Ukrainian naval intelligence sources); economic modeling (estimation of economic losses related to piracy-induced disruptions using data on freight rates, insurance premiums, and delayed shipments for Ukrainian exports (notably grain and metal)); case studies (detailed examination of piracy-related incidents affecting Ukrainian maritime routes from 2014 to 2024, including the blockade of the Sea of Azov, attacks on civilian cargo vessels, and rerouting of energy imports via alternative corridors).

The analysis indicates a significant correlation between increased piracy activity along key maritime routes and rising transportation and insurance costs for Ukrainian exporters and importers. According to industry reports and interviews with logistics stakeholders, rerouting and increased premiums for maritime shipments through high-risk piracy zones, particularly in the Gulf of Aden and near the Horn of Africa, have led to an estimated 8–12% increase in shipping costs for Ukraine-based companies between 2021 and 2023.

Additionally, disruptions to global supply chains caused by piracy have reduced the reliability of maritime delivery schedules, impacting Ukrainian trade volumes. For instance, delayed shipments of agricultural exports, which represent a key sector of Ukraine's economy, have caused financial penalties and contract losses, especially in high-demand markets like the Middle East and North Africa (MENA).

Ukraine's energy security has been particularly vulnerable due to piracy-induced disruptions of maritime transport routes that are critical for the import of crude oil and LNG (liquefied natural gas). During periods of heightened piracy off the West African coast, tankers destined for Black Sea ports were forced to adopt longer, costlier routes or faced delays. According to data from the Ukrainian Ministry of Energy, the rerouting of tankers in 2022 alone contributed to a 3.4% increase in average energy import costs.

The findings suggest that maritime piracy not only imposes direct economic losses but also affects Ukraine's geopolitical standing and its ability to maintain secure trade relationships. The need for international naval escort services and cooperation with NATO maritime forces in piracy-prone waters has increased dependence on Western security partnerships, aligning Ukraine's maritime strategy more closely with European and transatlantic priorities.

At the same time, limited naval capabilities constrain Ukraine's ability to respond independently to maritime threats, highlighting a gap in national security planning that requires urgent attention.

The results also emphasize the importance of Ukraine's involvement in international anti-piracy frameworks and initiatives. Engagement in global maritime security efforts, such as the Djibouti Code of Conduct and cooperation with the International Maritime Organization (IMO), has shown promise in improving the security environment for Ukrainian maritime operators.

However, Ukraine's limited resources and competing security demands have hindered its full participation in these initiatives.

Ukraine's reliance on global energy transit routes has grown since the beginning of the full-scale war with Russia, especially after the partial loss of control over key energy infrastructure in the east. Piracy, therefore, compounds existing vulnerabilities, creating a compounded threat matrix when considered alongside geopolitical and military risks.

Maritime piracy, especially in hybrid forms, poses a serious threat to Ukraine's economic stability and energy independence. As Ukraine seeks to rebuild its economy amidst ongoing conflict, ensuring the security of maritime transport becomes a matter of national survival. The findings suggest that Ukraine must invest in maritime domain awareness, strengthen naval capacity, and engage in international maritime security frameworks. Regional cooperation with Black Sea and NATO partners, alongside legal advocacy in international courts, will be critical in defending Ukraine's maritime and energy interests.

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