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IRAN'S ASYMMETRIC DRONE WARFARE: CRITICAL LESSONS FOR THE U.S.-ROK ALLIANCE

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In recent years, advances in military-use drone technologies—from intelligence, surveillance, and reconnaissance (ISR) systems to enhanced targeting and strike capabilities—are challenging traditional doctrines of air defense and deterrence. The expanded role of unmanned aerial vehicles (UAVs) in Russia's aggression in Ukraine and the yet-unfolding U.S.-Israel-Iran conflict in the Middle East demonstrates the valuable lessons and clear warnings for the future of potential conflicts and military escalation on the Korean Peninsula.

It is yet unclear how (or, even when) the Iranian conflict will resolve. There is, however, little doubt that U.S. adversaries in the Indo-Pacific region—including North Korea, Russia, and China—are paying close attention. Increasingly, it is likely that emerging, disruptive technologies (EDTs), including future UAVs supported by artificial intelligence (AI) systems, will present new challenges for U.S. and allied preparedness against asymmetric warfare in the Indo-Pacific region.

To strengthen U.S.-ROK alliance readiness, both Washington and Seoul would benefit from the recognition that Iran's fielding of thousands of low-cost drones represents more than a temporary, insular trend, but rather a probable strategic shift in adversaries' warfighting calculus. In precise terms, today's conflict in the Gulf demonstrates the asymmetric advantage of fielding UAVs against traditional high-cost interceptors—a fact that Pyongyang is undoubtedly noting in the development of its own drone technology. Should a contingency break out on the Korean Peninsula, the United States and South Korea must have a prepared, tested, and hardened doctrine of engagement for drone and counter-drone responses.

오늘날 걸프지역의 분쟁은 무인항공기(UAV)를 기존의 고비용 요격 체계에 맞서 운용할 때의 비대칭적 이점을 보여주고 있으며, 북한 역시 자국의 드론 기술개발 과정에서 이 점을 분명히 주목하고 있을 것이다

Crisis in the Gulf: 'A Battle of Innovation'

On February 28, 2026, the United States and Israel launched joint aerial strikes on Iran. The military operation, codenamed "Epic Fury," has triggered a seemingly ever-widening geopolitical, economic, and energy security crisis in the Middle East. While the U.S. government's declared reasoning for the attacks centered on limiting Iran's nuclear weapons capabilities, Washington seemed unprepared and potentially unequipped to address Iran's extensive retaliatory drone and missile campaigns across the Persian Gulf.

Since the outbreak of the conflict, Iran's Shahed-class one-way attack drones have struck U.S. embassies in Saudi Arabia and Iraq, as well as a U.S. tactical operations center in Kuwait, killing six U.S. servicemembers. Furthermore, Iran has not hesitated to leverage its drone tactics against neighboring Arab nations. Iranian drone strikes have reportedly targeted military and civilian installations in the United Arab Emirates, Bahrain, Kuwait, Saudi Arabia, Qatar, and Oman. Holding energy and economic infrastructure at risk has also been a clear tactic in Iran's strategic drone campaign. By threatening critical infrastructure, the Islamic Revolutionary Guards Corps (IRGC) has effectively disrupted the Strait of Hormuz—one of the most critical global shipping routes for oil and liquefied natural gas.

Tehran's actions are proving that large-scale UAV campaigns—at least in the short-term—may be an efficient and cost-effective strategy. Iran's one-way attack drones, such as the Shahed-136, cost approximately $20,000 to $50,000 per unit. In contrast to the U.S. multi-million-dollar surface-to-air missile defense systems like the PATRIOT and Terminal High Altitude Area Defense (THAAD), Iran's drone campaign enables Tehran to impose asymmetric military costs, while simultaneously eroding the long-term sustainability of U.S. regional defense operations.

Tehran's Lessons for Pyongyang

What is the lesson here for North Korea? Though we are still early in the unfolding crisis, U.S. policy analysts have been quick to argue that Washington's actions in the Gulf are sending clear signals to North Korea. Both the U.S. "Operation Midnight Hammer" airstrikes on Iranian nuclear weapon facilities in June 2025 and February's joint U.S.-Israeli attacks may harden North Korean leader Kim Jong-un's resolve to expand and maintain the nation's nuclear weapons and missile programs. On March 24, Kim stated at the Supreme People's Assembly that North Korea's nuclear weapons status is "irreversible." As a result, a return to inter-Korean denuclearization talks is unlikely to be on the table in the near term.

Beyond the nuclear disarmament debate, however, there is a more immediate and concerning question: How might North Korea—likening its position to Tehran's—seek to leverage its own expanding drone fleet to the greatest advantage during a potential conflict on the Korean Peninsula? Most likely, Iran's actions are providing the DPRK with another view of the strategic value and tactical usages for drone warfare. For North Korean military forces, this lesson only serves to build upon the on-the-ground combat knowledge that DPRK troops are gaining from supporting Russia's war in Ukraine.

이란의 드론 전략을 지켜보는 가운데, 북한이 얻을 수 있는 핵심적 교훈은 비교적 군사력이 약한 국가라도 저비용 무인항공기(UAV)를 운용함으로써 전략적 표적을 공격하고 이를 인질처럼 압박할 수 있다는 점일 수 있다

Witnessing Iran's drone strategy, the critical lesson for Pyongyang may be that, by fielding low-cost UAVs, nations with comparatively weaker military forces are able to attack and hold hostage strategic targets, as well as evade high-end military hardware not designed to track, target, and intercept low-flying attack drones.

Looking forward, North Korea may choose to ramp up its own UAV research and development (R&D) for mass-production of advanced drones—a likely outcome which the United States and South Korea must be prepared to address.

South Korea's Counter-Drone Challenge

South Korea has already begun to experience North Korean drone tactics on the Korean Peninsula. In recent years, North Korea, which maintains a fleet of an estimated 1,000 drones, has tested the boundaries of its drone technology, including targeted ISR missions into South Korean territory. While incursions in 2014 and 2017 were limited to single-drone missions—in most cases, crashing in relatively remote northern regions in ROK territory—North Korea's December 2022 incursion underscored South Korea's need for a national security strategy on drone and counter-drone capabilities.

On December 26, 2022, North Korea piloted five two-meter-long reconnaissance drones across the heavily fortified demilitarized zone (DMZ) into South Korea. In response to the incursion, the ROK military scrambled fighter jets and attack helicopters in an attempt to track and intercept the DPRK's drones. One drone successfully reached Seoul—a city with an estimated population of 10.1 million—and after entering the no-fly zone near the South Korean presidential office, was able to safely return to North Korea. Despite a reported five-hour mission, the ROK military was unable to intercept any of the North Korean drones.

The failure to adequately detect, track, and destroy North Korea's ISR drone infiltration exposed South Korea's low-level readiness at the time, raising heavy skepticism over the nation's long-term counter-drone competency. Since then, South Korea has pledged $441 million for a five-year program to build specialized counter-UAV technologies, including the development of laser weapons and signal jammers. In September 2023, the ROK Drone Operations Command was established and, though interfacing with US Forces Korea through the Korea Air and Space Operations Center (KAOC), mainly serves to coordinate South Korea's internal drone-related policy and strategy across ROK Army, Navy, Air Force, and Marine Corps.

한국은 북한의 드론 기술 발전에 대응해야 하는 동시에, 자국의 무인항공기(UAV) 기술 개발을 위한 연구개발(R&D) 역량을 강화하고 군 인력의 운용 능력을 확대해야 하는 이중적 과제에 직면해 있다

Today, South Korea faces the dual challenge of combating North Korean advancements in drone technologies, while simultaneously exploring R&D options for its own national UAV technologies and expanding capacity-building for military personnel. South Korea's in-development UAVs systems range from relatively low-cost to high-end technologies, including Korean company, Nearthlab's Xaiden first-person-view (FPV) AI-enabled ISR drones and the ongoing development of South Korea's advanced stealth drone, the Kaori-X, designed to fly in synchronized

formation alongside KF-21 Boramae fighter jets. Furthermore, South Korea has launched UAV training campaigns, aimed at broadening ROK soldiers' operational familiarity with deployable drone technology.

At the same time, North Korea also continues to upgrade its UAV technology—with the more recent innovations, such as the Saetbyol-4 and Saetbyol-9, possessing seemingly improved range and capabilities. Still, South Korea's pace of innovation and policy attention to advancing its UAV capabilities cannot risk lagging behind.

Prospects for a U.S.-ROK 'Drone' Alliance

As the battlefield changes, so too must the U.S.-ROK strategy to address rapid innovations in drone and anti-drone technologies. To address these challenges, the United States and South Korea will need to reassess the strategic importance of UAVs in U.S.-ROK joint deterrence readiness and conflict preparedness in the region.

미국과 한국은 역내 한·미 공동 억제 태세와 분쟁 대비 차원에서 무인항공기(UAV)의 전략적 중요성을 재평가할 필요가 있다

First, Washington and Seoul—recognizing the rising implications of drone technology in modern warfare—must establish strategic national security agendas on how to address potential UAV incursions and attacks on (and around) the Korean Peninsula. Prior to a crisis, the United States and South Korea have an opportunity to formulate integrated detection, tracking, and interception frameworks centered on advancing joint counter-UAV capabilities. U.S.-ROK scenario-focused military training operations, such as the counter-drone drills in 2023 and March 2026, are crucial examples for cultivating operational confidence and joint readiness.

Second, in light of Iran's recent drone campaigns, the U.S.-ROK alliance should re-evaluate the military doctrine which specifies circumstances, conditions, and limitations for military response to future North Korean drone-specific aggression. To avoid miscalculation on the Korean Peninsula, the United States and South Korea must agree upon what constitutes as escalation thresholds for potential UAV activities—ranging from low-end threats and ISR-related incursions to targeted attacks. As demonstrated by Tehran's threats of UAV attacks along the Strait of Hormuz, an adversary's ability to deploy low-cost assets to hold hostage strategic points of transportation or critical infrastructure could provide strategic leverage in an ongoing conflict or even be utilized as a bargaining chip for escalation pathways.

Moreover, the conflict-prone and densely populated environment on the Korean Peninsula demands careful attention for the ambiguous legal and dual-use nature of UAV operations, especially in grey-zone scenarios. A case in point, when South Korea responded tit-for-tat to North Korea's 2022 drone incursion by launching two RQ-101 Night Intruder UAVs across the DMZ into the DPRK, the United Nations Command declared that the inter-Korean drone incursions were a violation—on both sides—of the 1953 Armistice Agreement, risking large-scale escalation between the two Koreas.

Third, a nation's ability to maintain rapid development-to-deployment cycles for military-use UAV technologies will be crucial for modern warfare. The United States and South Korea could leverage joint R&D initiatives to

strengthen their respective UAV-relevant industrial defense complex. As South Korea works to expand its defense industry, there may be opportunities to work with U.S. manufacturers for military-use drone production, especially in new technologies for medium- and high-altitude UAV capabilities. For anti-UAV technologies, South Korea will need to rapidly upscale investment and production for interceptor drones, designed to target, disable, or destroy adversarial attack drones. Whether drones are U.S.- or South Korean-built, both nations would benefit from enhanced supply chain resilience for critical UAV components, particularly for large-scale and long-term production.

Fourth, the psychological threats of drone warfare and subsequent socio-political implications should not be ignored. Adversarial threats for targeting civil infrastructure could stoke public fear, seeding uncertainty in government and military capabilities to ensure the safety of citizens. To strengthen civil defense awareness and resilience measures, South Korea must continue to conduct nationwide air-raid and evacuation drills, such as trainings in August 2023 and 2025, as a broader strategy to mitigate the potential societal impacts of UAV-related threats.

In conclusion, Iran's expansive drone campaigns accentuate a broader transformation in modern warfare—one in which low-cost, scalable technologies are eroding traditional tactical advantages of high-tech deterrence and defense systems. As next-stage AI-enabled UAVs loom large on the horizon, strengthening a future-oriented, integrated U.S.-ROK 'drone alliance' will be essential to ensuring that emerging drone threats do not outpace allied readiness, resilience, and strategic stability.

미래지향적이고 통합된 한·미 '드론 동맹'을 강화하는 것은, 새롭게 부상하는 드론 위협이 동맹의 대비 태세와 회복력, 그리고 전략적 안정성을 앞서가지 않도록 하기 위해 필수적이다

The ROK-US Policy Brief is a joint publication between the Seoul National University Institute for Peace and Unification Studies (IPUS) and The George Washington University Institute for Korean Studies (GWIKS) dedicated to exploring current Korea-related policy matters within regional and global contexts.