

NUCLEAR POWER DYNAMICS OF RUSSIA, NORTH KOREA, AND IRAN IN THE INDO-PACIFIC: QUAD STRATEGIC RESPONSES

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INTRODUCTION:

John Tilemann, the Research Director of the Asia-Pacific Leadership Network for Nuclear Non-Proliferation and Disarmament, highlighted that the central point of global nuclear risks has moved to the Indo-Pacific region. He noted that this area hosts several nuclear-armed nations, some of which are not acknowledged under the Treaty on the Non-Proliferation of Nuclear Weapons. Moreover, there are multiple critical flashpoints that maintain tension on both regional and global levels; however, the region is deficient in the infrastructure and institutional frameworks needed to effectively tackle these rising nuclear threats. The nuclear landscape of the Indo-Pacific is shaped not just by regional conflicts and geopolitical rivalries but also by the growing number of nuclear energy programs. John Tilemann underscored the need for the international community to view the region as an interconnected whole, rather than as isolated sub-regions or separate crises. He expressed concern that traditional pathways for building mutual understanding are fading, while the current mechanisms for managing crises fall short. Tilemann urged nations within the region, with support from global partners, to take proactive steps in creating new initiatives and frameworks to address escalating security risks, especially those related to nuclear threats (Pfneisl, 2023). The majority of nuclear-armed nations are either located in the Indo-Pacific or maintain a consistent military presence in the region. The challenges in distinguishing between conventional and nuclear weapons systems are growing, particularly at the regional level. This is driven by the rapid spread of missiles and other advanced delivery systems, intense competition in emerging technologies, increased activity and rivalries in outer space, shifts in the strategic balance, and evolving military doctrines that reflect these changes. In such a complex environment, even a small conflict in the region risks involving a nuclear element. This makes it all the more important to prioritize efforts to deter war especially nuclear war and to work tirelessly to safeguard peace (Alberque, 2023).

RUSSIA NUCLEAR STRATEGY IN THE INDO-PACIFIC

Between 2022 and October 2023, Russia significantly ramped up its naval capabilities,

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commissioning eight new warships and support vessels, including a mix of nuclear-powered and conventional submarines. Notably, on December 11, two nuclear-powered submarines officially joined the fleet, alongside the conventional submarine RFS Mozhaisk, further strengthening Russia's maritime presence. The Russian Navy faces the distinct challenge of managing the demands of four separate fleets operating in the Arctic, Pacific, Black, and Baltic Seas, along with its Caspian Sea flotilla. Despite the strain of the ongoing war in Ukraine, the Pacific Fleet's modernization efforts and activities have continued largely unaffected. In a notable move, a naval task group from the Pacific Fleet recently embarked on a tour across Southeast and South Asia, signaling Russia's growing interest and expanding presence in the region (Modern Diplomacy, 2023).

Russia's defense cooperation with China has been pivotal in strengthening the capabilities of the People's Liberation Army (PLA). For over thirty years, Russia has been China's top foreign arms supplier, significantly boosting China's air, naval, and anti-air defense systems. Recent sales, like the S-400 air defense system and Su-35 fighter jets, have greatly enhanced China's ability to challenge airspace control in the Indo-Pacific. This military collaboration, especially in areas that could affect US-led coalitions, may shift the US's attention away from European security, potentially creating openings for China or Russia to act during times of conflict. Beyond arms deals, the two countries have stepped up joint military activities, including ground and naval exercises, which have grown more frequent and intense. Since 2012, their naval drills in the Western Pacific have aimed at signaling opposition to US-South Korea exercises. Their regular air patrols and shared participation in each other's drills have further solidified their military relationship (US Army War College - Strategic Studies Institute, n.d.)

For the first time, China and Russia have carried out a joint air patrol near Alaska and in the northern Pacific. The Russian Ministry of Defence confirmed that the two countries were conducting strategic air patrols in a "new operational area." The patrol involved two Chinese Xian H-6 bombers and two Russian Tu-95 bombers, with Russian fighter jets providing an escort. This marks the eighth such cooperative bomber mission since 2019, with previous missions taking place over the Sea of Japan, the East China Sea, and the Western Pacific. Some of these flights even passed through the Air Defense Identification Zones (ADIZ) of Japan and South Korea. These joint air and maritime patrols are becoming increasingly frequent, signaling a growing partnership between China and Russia. This expanded cooperation comes after the two countries declared a "no limits" partnership in 2022. Their navies have been conducting joint exercises since 2012, in areas such as the Baltic Sea, the Sea of Japan, and the Arctic. Recently, a flotilla of 11 ships, including destroyers from both nations, an intelligence-gathering vessel, and other support ships,

sailed near Alaska and the Aleutian Islands. This was part of their annual joint maritime patrol in the Asia-Pacific, which included a three-day drill in the South China Sea. Beyond their air and maritime cooperation, the China-Russia partnership also involves nuclear collaboration. Since 2018, Chinese forces have regularly participated in Russia's major military exercises, including Kavkaz, Tsentr, Vostok, and Zapad. In early 2023, Western media reported that Russia's state-run nuclear energy company, Rosatom, had been supplying China with thousands of kilograms of highly enriched uranium. This uranium is intended for use in China's fast breeder reactors, which U.S. officials believe could potentially produce weapons-grade plutonium, aiding China's nuclear weapons program (Young, 2024).

NORTH KOREA NUCLEAR PROGRAM: REGIONAL SECURITY AND DIPLOMATIC CHALLENGES

North Korea has tested a new hypersonic intermediate-range missile, designed to target distant locations in the Pacific. Leader Kim Jong Un emphasized his commitment to expanding the country's arsenal of nuclear-capable weapons as a countermeasure against rival nations. In 2024, North Korea showcased several advanced weapons systems, including solid-fuel intercontinental ballistic missiles capable of reaching the U.S. mainland. The country also unveiled a variety of shorter-range missiles designed to penetrate and overwhelm missile defense systems in South Korea, further highlighting its evolving military capabilities (Tong-Hyung, 2025).

North Korea has announced the successful test-firing of a new hypersonic intermediate-range ballistic missile (IRBM), according to state media outlet, the Korean Central News Agency (KCNA). This test is reportedly part of the country's efforts to enhance the durability and effectiveness of its strategic deterrence capabilities. In a statement published by KCNA, North Korean leader Kim Jong Un emphasized the purpose of the development, stating, "Like all military powers, the goal of developing a new hypersonic missile is to strengthen the nation's nuclear deterrence by creating a weapon system capable of altering the course of war and defying any response. This system serves as the cornerstone of our strategic defense." The report highlighted that the missile incorporated advanced carbon-fiber composite materials in its engine section. It was launched northeastward from a site near Pyongyang, reaching a maximum altitude of 99.8 kilometers before descending to a second peak of 42.5 kilometers. During its flight, the missile traveled approximately 1,500 kilometers at speeds reaching 12 times the speed of sound. The missile ultimately struck its intended target area in open waters. This development underscores North Korea's ongoing pursuit of advanced missile technologies, further escalating concerns over regional security and global stability (Mahadizer, 2025).

IRAN NUCLEAR PROGRAM AND ITS POTENTIAL INFLUENCE ON THE INDO-PACIFIC

The relationships between Iran and nuclear-capable countries like India, Pakistan, and North Korea extend far beyond the Middle East, presenting significant challenges for U.S.-led efforts to prevent nuclear proliferation. These ties introduce risks that go beyond economic sanctions, but they also create opportunities to more effectively address Iran's nuclear ambitions. By thoughtfully engaging with these nuclear powers and shaping their positions, there is potential to bring Iran to the negotiating table for a meaningful and enduring agreement. The Middle East is deeply interconnected with the broader Asian continent and closely tied to developments in the Indo-Pacific region. Issues like nuclear weapons development and vague policies regarding their potential use are serious concerns for the United States and its allies, especially as Washington navigates its complex relationship with another nuclear power, China. Iran's unclear and seemingly unpredictable nuclear objectives, coupled with the activities of its regional affiliates, have contributed to significant instability in the Middle East. This has heightened concerns among key U.S. allies, such as Israel, Saudi Arabia, and the Gulf Cooperation Council (GCC) states, which are now contemplating their own nuclear deterrence strategies.

Iran's support for groups like Hezbollah, Hamas, and the Houthi movement, as well as its alliance with the Bashar al-Assad regime in Syria, has further destabilized the region. Between 2015 and 2018, before the United States withdrew from the Joint Comprehensive Plan of Action (JCPOA), Iran skillfully exploited the rivalry between China and India by offering both nations economic incentives to gain influence. India's investments in the Chabahar Port and the International North-South Transport Corridor demonstrate Iran's ability to secure regional support and offset the impact of Western sanctions.

This strategic balancing act highlights Iran's resilience and its ability to adapt under challenging circumstances, making it harder for the United States to curb Tehran's nuclear activities. However, by fostering cooperation with India and Pakistan—both nuclear-armed states outside the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)—the U.S. can promote a model of responsible nuclear management. Encouraging these nations to align their nuclear programs with global nonproliferation norms could set an example for Iran, demonstrating that nuclear energy and security can coexist without the need for weaponization. This approach would also reinforce the United States' broader commitment to nonproliferation while undermining Iran's rationale for pursuing its nuclear ambitions (Explore Pacific Forum's Insightful Indo-Pacific Analysis, 2024).

THE QUAD RESPONSE TO NUCLEAR THREATS IN THE INDO-PACIFIC

The Indo-Pacific region is increasingly seen as a high-risk area when it comes to nuclear tensions, with reports of conflicts involving nuclear-armed nations or alliances focused

on nuclear capabilities surfacing almost every week. As of 2023, the world is estimated to have around 12,500 nuclear warheads, with nearly 12,400 of them held by eight major powers: the United States, Russia, the United Kingdom, France, China, India, Pakistan, and North Korea. Each of these countries plays a significant and assertive role in the Indo-Pacific, contributing to the growing nuclear concerns in the region. Exponential growth in emerging technologies with both civilian and military uses is increasing nuclear risks in sensitive areas like the Taiwan Strait, South China Sea, the Korean Peninsula, and the Indian Ocean Region. By the 2030s, we are likely to see a massive buildup of missiles in the Indo-Pacific. One example is India's export of the Brahmos missile to the Philippines, a key U.S. ally, which could intensify the nuclear race in Southeast Asia.

As a result, missiles will play a crucial role in the early stages of any military conflict in these regions. Additionally, the drive for undersea nuclear deterrents is heightening nuclear tensions, raising the potential for accidents that could have catastrophic consequences. Nuclear risks are complex, diverse, and often difficult to predict, but they are not beyond our ability to manage. One key step toward reducing these risks could be creating a network of nuclear conflict monitors in the Indo-Pacific region. This group would track both intentional and accidental nuclear threats stemming from incidents or misunderstandings. A practical approach could be setting up a Quad Nuclear Risk Assessment Center, which would carefully examine these incidents and assess potential targets of nuclear strikes in the region. Additionally, the center could focus on analyzing the dangers posed by false alarms and close calls, helping to prevent catastrophic missteps in the future. Through dialogue and systematic planning, we can take steps to mitigate these risks, making the world safer for everyone. This approach would allow governments to establish solid nuclear safety and security measures, helping policymakers make well-informed decisions to improve vulnerable nuclear command, control, and communication (NC3) systems, and update outdated strategies. By offering crucial insights into nuclear risks and how to manage them, the Quad could encourage the ASEAN Regional Forum and the East Asia Summit to adopt a proactive nuclear de-risking agenda.

Additionally, the Quad could help ASEAN nations create stronger trade control systems to protect nuclear plants and curb the missile race. More importantly, the Quad should build on the G-20 Delhi Declaration's recent commitment to "strengthening international cooperation to promote nuclear safety globally," by developing a comprehensive nuclear risk-reduction strategy. Over time, these efforts will enable the Quad and its allies to assess the nuclear capabilities of the China-led bloc, the likelihood of nuclear accidents, and potential paths for Nuclear Confidence-Building Measures (NCBMs). Ultimately, this vision could inspire other countries to adopt similar nuclear risk-reduction measures, fostering

trust and promoting norms of responsible nuclear behavior, and contributing to a free, open, inclusive, and rules based Indo-Pacific(Choudhary, 2024).

COMPARATIVE ANALYSIS OF NUCLEAR PROLIFERATION IN THE INDO-PACIFIC

Russia and North Korea find themselves in similar situations, both facing heavy international isolation and harsh sanctions, Russia because of its invasion of Ukraine, and North Korea because of its nuclear weapons and missile programs. This shared isolation has pushed them closer together, forming a partnership driven by mutual needs. Russia, engaged in a brutal war of attrition in Ukraine, has turned to North Korea for much-needed munitions. The war demands a constant supply of artillery shells and missiles, and while the quality of North Korean weapons may not be top-tier, they're still crucial for Russia to keep fighting. Despite both countries denying it, there's strong evidence showing that North Korea has already sent thousands of containers filled with weapons to Russia. The U.S. has even imposed sanctions on Russian entities involved in these transfers, but the partnership continues, now formalized under the CSP treaty, which allows Russia to access North Korea's affordable weapons.

For North Korea, this deal is about much more than just weapons sales. The country receives cash and food in exchange for its arms, both vital for the survival of Kim Jong-un's regime. The weapons trade also offers North Korea a rare chance to test its weaponry in real combat conditions, which raises concerns, especially for South Korea. On top of that, there are fears that Russia could share advanced weaponry or missile technology with North Korea in return, which would further destabilize the Indo-Pacific region and threaten global security (Kim, 2024).

The key area where Iran might seek to collaborate with Russia is nuclear technology. However, this potential partnership is limited by Russia's own interests. Moscow is likely to prefer that Iran doesn't develop nuclear weapons, unless there's a significant increase in nuclear proliferation across the region or globally. Before the war in Ukraine, Russia had supported efforts to renegotiate the nuclear agreement between Iran and the United States. But with that initiative now stalled, and given Russia's relationships with Gulf countries, Moscow finds it difficult to openly support a nuclear-armed Iran. Russia might be willing to accept Iran as a nuclear power if Iran develops nuclear capabilities on its own, rather than through direct cooperation with Russia, which would put them at odds with the United States. Iran has publicly supported Russia's invasion of Ukraine, with Supreme Leader Ali Khamenei calling it a "defensive act" against an imperialistic West and a growing NATO presence. However, this support doesn't offer much tangible benefit to Russia, except in parts of the Middle East where Iran still holds influence.

With both countries facing severe international sanctions, there is an opportunity for

Iran and Russia to strengthen their economic ties, but the potential is limited. They've announced plans to build a transport corridor-a combination of rail, road, and sea routes-to link their economies and increase trade. However, this project faces a number of hurdles, including disagreements over funding, a lack of financial resources, construction delays, and the ongoing tensions between Armenia and Azerbaijan. Beyond military equipment, there are not many other resources these two oil-exporting nations can offer each other. In 2022, Russia was Iran's fifth-largest trading partner and the largest investor, but Iran accounted for less than 1 percent of Russia's total trade, making it only the sixteenth-largest partner. Despite several trade agreements, trade between the two countries fell by 17 percent in 2023 compared to the previous year, reaching a level similar to their trade with the European Union-around \$5 billion. However, if further sanctions are placed on Iran, trade with Russia may become even more crucial for Tehran. On top of that, Iran and Russia compete in many of the same markets. Both countries sell oil to China, which reduces their ability to set prices, and Russia has also undercut Iran in a variety of other commodity markets. Furthermore, as long as Russia, like China, wants to maintain balanced relationships with the Arab and Gulf States, it will be limited in how much it can deepen its ties with Iran (Chivvis & Keating 2024).

FUTURE PROSPECTS FOR NUCLEAR NON-PROLIFERATION IN THE INDO-PACIFIC REGION

The increasing collaboration between Russia, China, North Korea, and Iran is creating a more unstable environment, both in the Indo-Pacific and globally. These partnerships are raising alarms, especially as tensions escalate in regions like Europe and the Middle East. Iran's growing nuclear ambitions, in particular, are seen as a potential trigger for further instability, with many drawing parallels to Russia's war in Ukraine. A swift, decisive resolution in Ukraine could strengthen U.S. alliances and demonstrate the success of U.S. strategy, giving global support a boost.

At the same time, Russia and China are increasingly controlling the global narrative, especially when it comes to arms control treaties. Russia's suspension of the New Strategic Arms Reduction Treaty (New START) and the demonstration of its new nuclear capabilities have shifted the balance of discourse in their favor. There are also rising concerns about the growing global support for the Treaty on the Prohibition of Nuclear Weapons (TPNW), which could undermine traditional nonproliferation frameworks, particularly the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and its verification measures. In this shifting nuclear landscape, it's crucial for the United States and its allies to reinforce the importance of nonproliferation, particularly in countries like South Korea and Japan. This effort might be more effective if it involves voices outside of government, adding credibility and influence.

Expanding diplomatic efforts within the global nonproliferation regime could help manage the evolving nuclear competition in the Indo-Pacific. (Buchanan. et.al. 2024, pg. no. 8-9).

CONCLUSION

The Indo-Pacific region is facing growing nuclear threats, with key players such as Russia, North Korea, and Iran at the forefront of these concerns. Russia has significantly increased its naval capabilities, strengthening its Pacific Fleet and deepening military cooperation with China. This includes joint military exercises and advanced arms sales, enhancing China's ability to contest U.S.-led coalitions. Despite sanctions, Russia has turned to North Korea for munitions, exacerbating regional instability. North Korea's nuclear ambitions are escalating, with the country testing advanced missile systems like hypersonic intermediate-range missiles, aimed at enhancing its strategic deterrence. Iran, meanwhile, continues to play a disruptive role in the Middle East, with its nuclear ambitions fueling regional tensions. Its alliances with nuclear-capable nations like Pakistan and North Korea complicate efforts to curb its nuclear activities. Iran's support for militant groups and regional affiliates has further destabilized the region. Despite facing sanctions, Iran remains resilient and strategically aligns with China and Russia to counterbalance U.S. influence. These dynamics underscore the interconnectedness of global security risks, with the growing nuclear competition between these nations amplifying the need for more robust nonproliferation frameworks and international cooperation.

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