

# India's Acquisition of the S-400 Air Defense System

## Implications and Options for Pakistan

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### Abstract

India's quest for attaining superior military technology has materialized in New Delhi's purchase of the S-400 air defense system from Russia. Adhering to the principles of offensive realism, India is aspiring to accumulate maximum power and establish its hegemony in the region. The Countering American Adversaries Through Sanctions Act (CAATSA) obliges the US president to impose sanctions on any state making a significant arms deal with Russia. However, considering India's strategic partnership with the United States, New Delhi is confident that it can circumvent CAATSA sanctions and secure a waiver. India's acquisition of this state-of-the-art technology will have a negative impact on the strategic stability of the region, providing a robust false sense of security to the Indian policy makers to execute lethal adventures in the region, with the assurance that India is invulnerable from any retaliatory attack. India's acquisition of the S-400 will alter the strategic stability momentarily; however, Pakistan has the capability to counter this perceived advantage and rebalance the shift in strategic stability.

### Introduction

The S-400 air defense system has emerged as an eye-grabbing technology, compelling several states to acquire it. Developed by the Almaz Central Design Bureau of Russia, the S-400 is a mobile air defense system that serves to engage intruding aircraft, unmanned aerial vehicles, cruise missiles, and ballistic missiles. It has surfaced as an antiaccess/area denial (A2/AD) asset designed to protect military, political, and economic assets from aerial attacks and has been tagged as "one of the best air defense systems currently made" by the *Economist* in 2017.<sup>1</sup>

An S-400 comprises two batteries, each with a command-and-control system, one surveillance radar, one engagement radar, and four launch trucks that are termed "transporter-erector-launcher."

In comparison to its predecessor S-300, the S-400 sports an upgraded radar system and a software update that enables it to fire new types of missiles.<sup>2</sup> The S-400 is equipped with four different types of missiles: short-range 9M96E

(40km), medium-range 9M96E2 (120km), long-range 48N6 (250km), and the very long-range 40N6E (400km).<sup>3</sup>

The S-400 operates in the following way:<sup>4</sup>

Long-range surveillance radar tracks object and relays information to command vehicle for target assessment.

After the target is identified, missile launch is ordered by the command vehicle.

The launch vehicle which is placed in the best position gets the launch data and releases the missile.

The missile is guided toward the target with the help of the engagement radar.

The S-400 has drawn the interest of US allies and adversaries alike. China and Turkey have deployed this system, and Qatar, Saudi Arabia, and Egypt have shown interest in acquiring it.<sup>5</sup> At the 2016 BRICS summit, an agreement was finalized between Russia and India for the purchase of five S-400 regiments.<sup>6</sup> In October 2018, both states formally inked a US\$5.43 billion deal in the annual India–Russia bilateral meeting in New Delhi.<sup>7</sup> The Indian government has paid US\$800 million to Russia as an advance payment and is expected to receive the first shipment of the S-400 regiments in late 2021.<sup>8</sup>

This article will analyze the impetus for India to acquire the S-400 air defense system. It will also analyze whether India would be able to attain a waiver from the United States regarding the purchase from Russia. Furthermore, it will shed light on the implications of this deal and discuss the options for Pakistan with respect to India's acquisition of the S-400.

### **India's Quest for the S-400 Air Defense System**

India's quest for acquiring military hardware seemingly remains insatiable. India continues to spend billions of dollars in the procurement of arms and is one of the largest arms importers in the world.<sup>9</sup> Several factors have pushed India to opt for the S-400 air defense system.

First, realist hegemonic aspirations have always inspired India, which envisions itself as superior to other states in the region. The postulates of John Mearsheimer's theory of offensive realism, according to which states must accumulate maximum power for themselves and should contend to flip the balance of power in their favor, have enticed Indian policy makers. Following these assumptions, New Delhi is on the path to hegemonize India's neighbors, project itself as the most powerful state in the region, and emerge as a major power in the long run.<sup>10</sup> There are certain determinants to qualify as a major power, and military might is one of them. India has found this state-of-the-art weaponry instrumental to ordain its military, as it will serve as a strategic upgrade in the Indian military. The system is integrated with autonomous detection and targeting systems, launchers, multifunctional radars, and command

and control and is equipped with the capability to fire multiple missiles to create a layered defense. Furthermore, it can track 80 targets simultaneously and can be made operational within five minutes. Major powers such as the United States, China, and Russia already possess robust air defense systems, and India wants to avoid lagging behind in this race.<sup>11</sup>

Second, India is keen to draw a multilayered defense shield over its capital New Delhi and Mumbai in the initial phase, with the same patterns to be replicated in other cities at subsequent stages.<sup>12</sup> India already has its own indigenous two-tiered ballistic missile defense (BMD) system, which is already operational. The BMD system encompasses the Prithvi Air Defense (PAD) and Advanced Air Defense (AAD) systems for high-altitude interception and low-altitude interception, respectively. The outermost layer of the Indian multilayered shield will constitute India's indigenous AAD and PAD,<sup>13</sup> with the new S-400 air defense systems comprising the second layer. The Barak-8 medium-range surface-to-air missile system, codeveloped by India's Defence Research and Development Organisation and the Israeli aerospace industry, will form the third layer. The Aakash area defense missile system will constitute the fourth layer. The National Advanced Surface-to-Air Missile System II (NASAMS-II) represents the innermost layer, aimed at protecting the cities.<sup>14</sup> Indian policy makers claim that the S-400 system, due to its sophistication, will serve as a cornerstone in the Indian air defense shield.<sup>15</sup>

Third, India aims to curtail Pakistan's capabilities by denying it ingress to the Indian territory in case of an aerial engagement, for which India is augmenting both defensive and offensive capabilities. On the offensive side, India is making major arms deal for different weaponry; the most prominent one is the agreement with France for the acquisition of 36 fighter jets. For defense, it has resorted to S-400 as a prime shield in this regard. The former Indian Chief of Air Staff, Air Chief Marshal (ret.) B. S. Dhanoa, in an interview stated that "the purpose of the S-400 missile system and Rafale is to hit Pakistani aircraft inside Pakistani air space and not when they come inside Indian territory."<sup>16</sup>

Likewise, New Delhi holds the view that the S-400 will act as a critical factor and a force multiplier to the Cold Start doctrine (CSD), first publicly discussed in 2004. New Delhi denied the mere existence of the CSD until 2017, when the Chief of Army Staff, Gen. Bipin Rawat, acknowledged it.<sup>17</sup> India's armed forces would be more optimistic about executing this doctrine under the umbrella of its revamped air defense system. The S-400 would make India more resolute in allowing a conflict to escalate with assurance that the S-400 would be able to shield its territory from any incoming attack.

Last, the fact that China already deployed the S-400 air defense system in 2018 is also another impetus for India to acquire this system, noting its strained relations and competition with its neighbor.<sup>18</sup>

Thus, India is acquiring its new air defense system to assert itself both regionally and globally.

### **Prospects of a Waiver for India**

Taking into account the Russian aggression as seen with the annexation of Crimea in 2014, its aggressive behavior in Syria, and Moscow's alleged involvement in meddling in the 2016 American elections, the Donald Trump administration introduced a set of sanctions (CAATSA) in 2017, calling for the enforcement of sanctions against any country making an arms deal with Russia.<sup>19</sup> Under CAATSA, countries are directed to avoid making significant transactions with the Russian defense industry. Following Beijing's purchase of the S-400 system and Sukhoi Su-35S, Washington triggered a set of economic sanctions against China.<sup>20</sup> Likewise, Turkey was penalized when it signed a deal worth US\$2.5 billion<sup>21</sup> to purchase the S-400 and was deprived of acquiring F-35 fighter jets, despite the fact that Turkey was part of the consortium responsible for developing and funding the F-35 fighter jet program.<sup>22</sup> However, American officials expressed concerns that the S-400 would precipitate problems of interoperability within NATO systems and more pointedly that Turkey's acquisition of the S-400 would pave the way for intelligence regarding the fifth-generation fighter jets to make its way into Russian hands through the technicians who are going to be present in Turkey for the installment of the S-400.<sup>23</sup> Thus, Ankara was formally excluded from the F-35 fighter jet program on 22 April 2021 with an official notification.<sup>24</sup>

India and the United States have signed the Communication Compatibility and Security Agreement, which lays the foundation for interoperability and sharing classified data. There is a prevailing perception in Washington that the S-400 deal serves as a potent threat to intelligence sharing under this agreement.<sup>25</sup> In June 2019, American diplomat Alice Wells stated that the S-400 will put a constraint on the extent to which the interoperability between India and the United States can be increased.<sup>26</sup> Washington has requested that New Delhi opt for the Patriot Advanced Capability (PAC-3) or THAAD defense system instead of the S-400. However, India has opted for the S-400 for its stated greater capabilities. Moreover, the THAAD defense system cannot intercept fighter aircraft, whereas PAC-3 has a limited range of 180km for aerial targets and 100km for ballistic missiles.<sup>27</sup>

According to the National Defense Authorization Act, the US president is authorized to grant waivers from punitive sanctions to states if transactions with the Russian defense industry is less than US\$15 million. However, India's S-400

deal involves the large sum of US\$5.43 billion, dwarfing the set criteria. Interestingly, there is another clause that asserts that waivers can be given to America's strategic partners—provided that US interests remain intact.

Washington has warned India that the purchase of S-400 could invoke CAATSA sanctions, yet India remains undeterred, deciding to shun the threat and proceed with the deal. In January 2020, a senior official of the State Department informed India that it will not be subjected to any exception on its deal and will not be given a blanket waiver.<sup>28</sup> However, he further added that “while there's not a blanket waiver, there's also not a blanket application. And so what I mean by that is there is a case-by-case analysis on where CAATSA sanctions could be applied.”<sup>29</sup> This leaves the room open for certain relaxations for India.

With the new US administration in office in January 2021, there were renewed its attempts to convince India to scotch the deal. During the visit of Defense Secretary Lloyd Austin to India in March 2021, he raised the issue of the S-400. Austin raised concerns with his counterpart, Minister of Defense Rajnath Singh, regarding the Russian air defense system.<sup>30</sup> The two did not discuss sanctions, as India has not received the systems yet, hinting that Washington is still looking toward the possibility of India backing out of the deal. However, shortly after Austin's visit, the Russian ambassador to India reiterated the firm determination to proceed with the S-400 deal, keeping in mind the “agreed timelines and other obligations.”<sup>31</sup> According to the *Hindu*, India is expected to start receiving the shipment in November 2021.<sup>32</sup>

Although there is speculation that the deal will have an adverse and detrimental impact on US-Indian relations, these claims are exaggerated, as there are slim chances that the strategic altruism that India is enjoying will cease to exist. There are enough reasons to suggest that the acquisition of the S-400 will not lead to sanctions. Previously, India has enjoyed exceptional behavior from the American administration. In 2007, India was able to secure a nuclear deal despite being a nonsignatory to the Treaty on the Non-Proliferation of Nuclear Weapons. Similarly, the United States has approved the sale of NASAMS-II to India,<sup>33</sup> ignoring concerns that New Delhi is opting for the S-400 and that compatibility issues can surface. Furthermore, Washington is advocating for India's membership in the Nuclear Supplier Groups, disregarding India's proliferation record. Moreover, it seems logical to assume that New Delhi will be able to secure a waiver from Washington for several reasons.

First, the United States values India as a vital partner in its Indo-Pacific strategy. Washington is trying its best to strengthen India to contain China. Thus, the Indian inclination to acquire the S-400 system will not endanger the bilateral relationship, as Washington will avoid jeopardizing its strategic partnership with India.

If Washington damages its relations with India over this deal, it will erode America's larger objective of containing China and thereby undermine US regional strategy, as there is no other country in South Asia that is in a position or has an appetite to contain China. Thus, the potential benefits of sanctioning India would not be proportionate to the risk of losing it as a strategic partner. Moreover, sanctioning India would push it further toward Russia, which is not what Washington would like to see.

Second, Russia has been the prime supplier of arms to India for a long time. According to the Stockholm International Peace Research Institution, between 2012 and 2016, Russian arms imports accounted for 68 percent of India's total arms imports.<sup>34</sup> However, India has diversified its arms imports, and Indian imports from the United States increased by 557 percent between 2008 and 2017.<sup>35</sup> As a result, the US military-industrial complex would not like to be deprived of this thriving market.

India itself appears confident that it would be able to secure the waiver. After General Rawat assumed office as India's first Chief of Defense Staff, one of his initial decisions was to call for the creation of a joint air defense command and to issue a deadline of 30 June 2020 for a proposal in this regard.<sup>36</sup> The issuance of this order appears to be in line with the arrival of the S-400 regiments by late 2021. The S-400 system is expected to be integrated with the Indian Air Force's Integrated Air Command and Control System, which is an automated command-and-control system for air defense integration of air- and ground-based sensors and weapon systems.<sup>37</sup>

Thus, it is expected that the United States will provide India a waiver as part of a strategic understanding between the two countries. Even if India does not secure an absolute waiver, the sanctions might be less intense or delayed to avoid straining relations between the two strategic partners.

### **Implications of India's Acquisitions of S-400**

New Delhi's inclination to opt for the S-400 air defense system signals India's firm determination to hegemonize its neighbors and share the table with the other major powers of the world in the longer run. These hegemonic aspirations of India will cause some repercussions, as it will alter the strategic environment of South Asia, which is already very vulnerable, ambiguous, and conflict-prone.

The deployment of air defense systems along with other latest weaponry that India is acquiring is destabilizing, as it will give it a highly deceptive and absurd sense of security. This may provoke India to take more risk to prevail in a future conflict. India would exhibit wishful thinking that, in the event of a conflict esca-

lation and possible Pakistani retaliation, India would be able to deny the penetration of Pakistani aircraft.<sup>38</sup>

Stephan Evera's assertion that war is more likely when conquest is easy fits aptly in the South Asian environment. The military institutions in India have instilled a sense of assurance in the Indian leadership that the acquisition of the S-400 along with its other military procurement will give a strategic edge over Pakistan. Therefore, India would believe that it has the space to take risk and carry out military adventures in Pakistan with the assurance that the S-400 will be able to defeat any counterattack.

The deployment of the S-400 in South Asia will alter the deterrence equation in the region. For deterrence to hold, both states must be assured that they are mutually vulnerable. According to rational deterrence theory, to deter the adversary, a state should be able to persuade its adversary that it can inflict unacceptable damage and will not be hesitant to make use of its capabilities.

Deterrence is a product of credibility and capacity. "Capacity" refers to the presence of the weapons and delivery systems to execute an attack; "credibility" refers to how well the capabilities are signaled to the other side. India's acquisition of the S-400 air defense system will not impact Pakistan's capacities, as it can still respond to Indian aggression with its existing capabilities and employ new measures to curtail the threat from this air defense system. However, the credibility would be undermined, as India may not be convinced that it is prone to unacceptable damage from Pakistan owing to the presence of its newly acquired air defense system, therefore impacting deterrence in an adverse manner and making it less hesitant to engage in a conflict with its archrival.

The Indian narrative being instilled with the acquisition of this air defense system is that it can target aircraft deep inside Pakistan's territory (i.e., if deployed in Himachal Pradesh, the region of Kashmir would be well covered). Deployment of the S-400 in Jalandhar, Punjab, the system would be able to shoot down aircraft in Islamabad, and if the Indian forces decide to deploy the system even further to Amritsar, Punjab, it would bring Peshawar into the range of the S-400.<sup>39</sup> However, these claims are hypothetical, and they do not take into account the response options, tactics, and concepts of employment from the Pakistani side.

The desires of Indian hegemony will materialize at the cost of stability in the region. The strategic stability of the South Asian region will be the victim and would have to bear the assault of India's offensive actions. The S-400 will alter the minimum deterrence levels, provoking an arms race between the archrivals, with each side upgrading and reinforcing its capabilities. Similarly, Prime Minister Narendra Modi is obsessed with Pakistan and would like to carry out "surgical strikes" in Pakistan's territory on the pretext of attacking terrorist base camps.

The strong sense of assurance of invincibility can also make India less hesitant to let a conflict escalate on the assumption that it has the capability to counter any sort of aerial attack from Pakistan. Such circumstances can lead to any conflict taking a lethal form—especially over Kashmir, which remains a nuclear flashpoint and can spark major conflict that could stir implications for the whole region.

Furthermore, India's so-called no-first-use (NFU) policy has been diluted to a great extent over the years. Several prominent Indian strategists have openly advocated for abandoning the NFU policy. Recently, while addressing the press at Pokhran, Indian defense minister Rajnath Singh stated that India can have a circumstantial departure from the NFU. Massachusetts Institute of Technology nuclear affairs expert Vipin Narang rightly points out that India is cruising toward an ambiguous policy that could render the NFU obsolete without formally changing it. Therefore, it would not be rational to rule out the possibility of India carrying out preemptive strikes in Pakistan, which would be lethal not only for the region but also for the world at large, noting that it can spark a major conflict between the two nuclear-armed countries.

All these factors add up and compound the threat to the regional peace of South Asia, making it more unstable.

When one analyzes the political implications of India's acquisition of the S-400 air defense system, it becomes apparent that this deal has dispatched a message that Indo-Russian bilateral ties are still strong at a time when questions were raised regarding the future trajectory of the relations, as there was speculation that India would be in a severe dilemma regarding its overlapping and conflicting relations with Moscow and Washington. However, New Delhi has signaled that it will adhere to a policy of multi-alignment, and India's intensifying relations with Washington will not alter relations with the former's old ally—rather India will resort to other states for its vested interests whenever deemed necessary. This was affirmed by a statement by Gen. Bipin Rawat, Indian Army Chief at the time. During his keynote address at the General K. V. Krishna Rao inaugural memorial lecture, General Rawat stated: "When Russians asked about the American sanctions, my reply was, 'yes, we do appreciate that there could be sanctions on us, but we follow an independent policy.'"<sup>40</sup> In response to a question, the general replied, "there is no end in sight to the manner in which" India and Russia can cooperate.<sup>41</sup>

Likewise, New Delhi has also attempted to pacify Moscow due to the animosity that emerged following India's withdrawal from the codevelopment of the fifth-generation jet fighter program with Russia.

At a more local level, New Delhi's sense of superiority will further jeopardize relations between India and Pakistan, as the former will be dismissive toward en-

gaging in any constructive dialogue with Islamabad. India and Pakistan have not engaged in any productive dialogue following an aerial engagement in February 2019, and India's unilateral action taken in Kashmir by the abrogation of Article 370 has further impaired the already strained relations between the two countries. With the delivery of the S-400 system in late 2021, Indian leadership likely will be even more reluctant to terminate the deadlock in the bilateral relations.

Therefore, the arrival of the S-400 will be destabilizing for the region.

### **Vulnerabilities of Air Defense Systems**

The invulnerability claims made by India are absurd, as there is no country in the world that can render its territory absolutely invulnerable from incoming attacks. There are several examples that prove that air defense systems have vulnerabilities and can fail to produce the desired results in certain circumstances either due to errors, operational failure, or tactics employed by the other side. Recently, Russian air defense systems have failed to perform optimally, particularly in Syria, Libya, and Armenia.

In April 2020, the Syrian military raised concerns over the performance of S-300 air defense system when its radars failed to detect and target Israeli cruise missiles on various occasions. On 28 February, Syria lost three Pantsir-S1 and one Buk-1 air defense systems deployed in Idlib.<sup>42</sup> These systems became a target of Turkish drones, which employed electronic warfare to evade the air defense systems. Ironically, the Pantsir-S1 is perceived as one of the most advanced air defense systems in the Russian inventory and is designed specifically for short-range air defense. However, footage showed that the radars of these systems were active before they were hit, which raises concerns over their effectiveness.<sup>43</sup>

The S-400 has not been used by the Russians in Syria to counter Israeli strikes. This development implies that even the Russian operators are aware that, in the likely event that the incoming aerial vehicles are more than the handling capacity of their state-of-the-art air defense system, some of them will go unintercepted, which will raise questions over a system tagged as the world's best air defense system.

The recent Nagorno-Karabakh conflict in late 2020, is another example where the vulnerability of air defenses against drones has been exposed. In the conflict between Azerbaijan and Armenia, the former prevailed over the latter by employing Turkish and Israeli drones, which neutralized the air defense systems of Armenia.<sup>44</sup> To destroy the air defense systems, Azerbaijan used decoy aircraft in Armenian territory, which were shot at by the deployed air defense systems. This action exposed the locations of those air defense systems, which were then neutralized by drones. Russian air defense systems such as the 2K12 Kub, 9K35 Strela-10, 9K33 Osa, and 2K11 Krug could not intercept a number of drones,

which either reached their intended targets or destroyed the air defense system itself. Azerbaijan has also claimed that it destroyed several batteries of the S-300 air defense systems<sup>45</sup> and circulated footage in this regard. This is highly concerning, as it suggests that the S-400, which is the successor of S-300, could have similar vulnerabilities.

In May 2020, the Libyan army was also successful in destroying nine Russian Pantsir-S1 air defense systems.<sup>46</sup> These systems were under the control of forces led by Khalifa Haftar.<sup>47</sup> The Libyan army used Turkish Bayraktar drones to destroy these air defense systems. This campaign has helped the Government of National Accord to take large territories previously under the control of Khalifa Haftar's forces.

The point is simple: if there are more incoming drones than the intercepting capacity of the air defense system, some are bound to pass through without interception despite the technological advancement of any air defense system.

Second, evolving tactics, concept of employment, and better training in air warfare can become a critical factor that can play an effective role in making such systems more vulnerable. Moreover, air defense systems were more optimal for Cold War-type scenarios, in which the travel time was at least 30 minutes. As far as India and Pakistan are concerned, the proximity would leave very minimal reaction time. In addition, the air defense systems act optimally when they are integrated effectively with other weaponry. If we look at India's weapons procurement, it is relying on diverse suppliers, acquiring the Phalcon AWACS from Israel, NASAM II missiles system from the United States, Rafale jets from France, and the S-400 from Russia. This diversity will pose compatibility issues when deployed, which can pave the way for errors. Furthermore, there are ample chances that the NATO countries may not be willing to allow the integration of Russian weaponry with their equipment, which will greatly impact the effectiveness of the S-400.

Thus, Indian claims are misleading due to the fact air defense systems have vulnerabilities that can be exploited, impacting their performance. With effective strategies they can be destroyed, deceived, and overwhelmed. Pakistan can take certain steps that can bring it to the position where it can employ an effective strategy to counter this impending threat.

## **Options for Pakistan**

Indian media and policy makers have instilled an absurd narrative, claiming that New Delhi's acquisition of the S-400 would enable India to control Pakistan's airspace, thereby claiming an extreme strategic edge over Pakistan. However, the S-400 cannot protect the whole length and breadth of Indian territory from all potential attacks and does not act as a concrete assurance of invincibility. The

notion that is being ignored is that all military equipment has vulnerabilities, and the S-400 is no exception.

The balance of power will be temporarily shifted, as India envisions itself as dominant over Pakistan and would be more willing to create turmoil in the region. Consequently, Pakistan would have to take countermeasures to rebalance the shift in strategic balance—not by choice but by compulsion. The last section of this article will analyze the possible options for Pakistan considering this impending threat.

The first option would be to follow the Indian example and pursue the S-400 air defense system. However, acquiring the S-400 would be an extremely irrational choice, noting that it is an exorbitantly expensive piece of military equipment and Pakistan would have to spend a hefty sum to acquire it.

Second, Pakistan is either developing or already possesses delivery systems that can counter the threat from the S-400. A milestone achievement of Pakistan was to develop the Ababeel multiple independently targetable reentry vehicle (MIRV),<sup>48</sup> with a range of 2,200km. In March 2017, Lt. Gen. Robert Ashley, US Army, then-director of the US Defense Intelligence Agency, confirmed that Pakistan possesses MIRV technology.<sup>49</sup> Ababeel was one of the projects that took the future strengthening of enemy's defense capabilities into account. Pakistan's MIRV technology with multiple warheads and in-built decoys can exhaust the S-400 and have a substantial impact on its effectiveness.<sup>50</sup> In the future, it is imperative for Pakistan to reinforce this technology to deter India.

Pakistan's indigenous missiles, with multiple stealth capabilities, have the capability to penetrate the S-400. The current missiles such as the Babur cruise missile system, the Raad air-launched cruise missile, and the Ghaznavi, Abdaali, and Shaheen are capable of firing from a safe standoff range and can be deployed to preempt and attack the S-400 system itself.

Babur, which is a nuclear-capable air-, land-, and sea-launch-capable missile with advanced features such as digital scene matching and area co-relation and terrain contour matching, can target even without the navigation of the GPS system, rendering the S-400 across the border incapable of intercepting the missile.<sup>51</sup> In addition, since Babur has a terrain-hugging trajectory and can fly a mere five meters above the ground, it can evade being intercepted by the S-400 by moving undetected by the adversary's radars. Moreover, the shield can also be pierced by using ballistic missiles with very high-altitude capability. Thus, the S-400 cannot impair Pakistan's defensive and offensive capabilities.

Third, the attainment of supersonic and hypersonic missiles is one way in which the S-400 will not be able to intercept the incoming missiles. Hypersonic missiles travel at the speed of Mach 5, which is five times faster than the speed of sound

(one mile per second), which would make it nearly impossible to intercept them. In the future, Pakistan should invest its efforts and resources in this regard.

Fourth, the Pakistan Air Force should work for the improvement of electronic countermeasures to disrupt the radars of the S-400 by employing both active and passive jamming techniques. It needs to invest in developing nonkinetic electronic counter-countermeasures. Pakistan should also resort to missile approach warning systems for its aircraft to mitigate the threat posed by the S-400. Likewise, new training programs should be developed, which involves low flying and new tactics to avoid detection by the S-400.

Last and most important, given the vulnerability of the air defense systems against drones as witnessed in several recent conflicts in Syria, Libya, and Armenia, Pakistan should invest considerably in this technology, as it has proved notably effective in neutralizing various air defense systems. Drones and decoy aircraft can saturate an air defense system and counter its effectiveness, thereby piercing the defense shields. It should look into indigenous development of drones and acquiring advanced drones from friendly states.

Thus, the threat from the S-400 might not be as lethal as it seems. With the help of better training, tactics, and emerging technologies, Pakistan can mitigate the threat from India's new adventure.

## **Conclusion**

The S-400 air defense system has emerged as an impressive technology that has drawn the attention of Indian policy makers. The Indian regime is all set to obtain this technology, despite the fact that the purchase could invoke CAATSA sanctions. However, it is likely that India will be able to get a waiver or some relaxation from the United States, an important strategic partner. The introduction of the S-400 will have significant consequences for regional stability, creating a negative impact on the arms race and vertical proliferation in South Asia. The perceived assurance of invulnerability provided by the S-400 could provoke India to carry out surgical strikes in Pakistan. Likewise, Pakistan will also develop capabilities to counter this threat. Furthermore, the presence of the S-400 will make the South Asian environment prone to conflicts that could escalate and take a dangerous form between nuclear-armed states.

Although the S-400 represents an extremely advanced technology, the advent of new technologies always triggers the development of equally impressive countermeasures. Thus, in the future, there will be several ways to counter the threat posed by the S-400. 🌟

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