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Mr. Davinder Sandhu

Co-Founder & Chairperson, Primus Partners

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Wars used to evolve gradually, shaped over decades by industrial capacity, military doctrine, and the mobilisation of troops. Drone warfare has disrupted that pattern entirely. In less than a decade, unmanned systems have moved from classified military programmes and specialised reconnaissance roles to becoming one of the defining features of modern conflict. From the battlefields of Ukraine and Nagorno-Karabakh to the waters of the Red Sea and the Strait of Hormuz, drones have fundamentally altered how wars are fought, sustained, and prolonged.

At Primus Partners, we have observed this transformation with both urgency and strategic concern. The central argument of this report is not that India lacks technological progress in the drone domain. On the contrary, India has made significant strides in policy support, indigenous innovation, procurement, and the growth of a domestic drone ecosystem. The more difficult question, however, lies beyond acquisition.

When conflict begins — and when it does not conclude within days — can India sustain the operational tempo required to endure and prevail? This report argues that the answer will depend not merely on the sophistication of platforms, but on the resilience of the architecture that supports them. Modern drone warfare is sustained through robust logistics networks, distributed manufacturing, terrain-specific maintenance ecosystems, resilient supply chains, replenishment capability, war reserves, and integrated command structures capable of functioning under persistent pressure and attrition.

The lessons emerging from recent conflicts are remarkably consistent. The nation that prevails is not necessarily the one possessing the most advanced technology or the largest military inventory. It is the nation that can continue to launch, repair, replenish, adapt, redeploy, and replace systems on the thirtieth day of conflict with the same effectiveness as on the first.

For India, this challenge carries particular urgency. The country faces an increasingly contested security environment, with adversaries investing heavily in unmanned warfare capabilities, electronic warfare systems, and asymmetric strike architectures. This narrows the strategic window available for building not merely technological capability, but enduring operational resilience.

Initiatives such as Mission Drone Shakti and Mission Sudarshan Chakra represent important and timely steps in strengthening India’s unmanned warfare ecosystem. Yet, as this paper emphasises, these initiatives must now be matched by equal urgency in logistics doctrine, distributed industrial capability, counter-swarm architecture, sustainment planning, and integrated command systems. Future wars will not only shape military outcomes; they will influence economic stability, industrial resilience, supply chains, and geopolitical balance at a global scale.

This thought leadership paper by Lt Cdr Sabbir Ahmed Hussain (Retd.), AVP and team, is presented as a contribution to the evolving national discourse on defence preparedness in the age of drone-centric warfare. It is an evidence-based strategic perspective aimed at encouraging deeper discussion among policymakers, defence planners, industry leaders, and the wider strategic community.

We hope this report encourages India to look beyond platforms alone and begin strengthening the foundations that will ultimately determine national readiness, endurance, and strategic resilience in the wars of the future.

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List of Abbreviations

Abbreviation	Description/ Full Form
ISR	Intelligence, Surveillance, and Reconnaissance
USD	United States Dollar
DEW	Directed Energy Weapon
C-UAS	Counter-Unmanned Aircraft System
SOPS	Standard Operating Procedures
USF	Unmanned Systems Force
LOC	Line of Control
IACCS	Integrated Air Command and Control System
FPV	First-Person View
ICE	Internal Combustion Engine
THAAD	Terminal High Altitude Area Defence
OWA	One Way Attack
HALE	High-Altitude Long-Endurance
MALE	Medium-Altitude Long-Endurance
RCS	Radar Cross Section
IISS	International Institute for Strategic Studies
UCAV	Unmanned Combat Aerial Vehicle
LUCAS	Low-cost Uncrewed Combat Attack System
CENTCOM	United States Central Command
MSME	Micro, Small, and Medium Enterprises
DRDO	Defence Research and Development Organisation
CTS	Craftsman Training Scheme
MP-IDSA	Manohar Parrikar Institute for Defence Studies and Analyses
I2U2	India-Israel-United Arab Emirates-United States
AI	Artificial Intelligence
NITI	National Institution for Transforming India
GNSS	Global Navigation Satellite System
RF	Radio Frequency
R&D	Research and Development
SAKSHAM	Situational Awareness for Kinetic Soft and Hard Kill Assets Management
VARAHA	Vehicle-mounted Autonomous Reactive Assault and Hunter Architecture
CSIS	Center for Strategic and International Studies

Executive Summary

The next drone war on India’s borders will not be decided by who unveils the smartest prototype in peacetime. It will be decided by who can still launch, repair, recharge, reload, and replace unmanned systems on day ten of conflict. Recent wars have turned drones from niche enablers into central military power. Ukraine made drone warfare its own branch. The Hormuz crisis offered another lesson. Sustained low-cost drone and missile attacks forced defenders into tough economic and operational choices. Expensive interceptors were repeatedly used against cheaper threats. The challenge was not just interception but also keeping enough interceptors available during prolonged action. Iran’s saturation strikes on Israel showed that even top air-defence systems rely on layers, distributed sensing, and deep stocks of interceptors.

India has moved fast in the past decade. Drone startups are multiplying. The Services have expanded procurement. Government platforms like iDEX have helped build a major defence technology ecosystem. Counter-drone systems, loitering munitions, ISR platforms, and swarm tech are now central to military planning. But the next challenge is not just making drones. It keeps them in action during high-intensity conflict.

Modern wars are not sustained by technological brilliance alone. They are sustained by industrial depth, repair cycles, war reserves, and supply chains that do not collapse during the first week of attrition. A drone that cannot be recharged in the cold, repaired after a rough landing, updated after the enemy changes frequencies, or replaced after attrition is not a combat system. It is a fleeting demonstration. The lesson for India is that magazine depth, low-cost layers, and logistics depth are now inseparable from deterrence.

India’s drone stance changed significantly over the past five years. The Armed Forces added about 2,000-2,500 drones to service. These are backed by USD $361- $421 million in drone investment. In October 2024, a government agreement secured high-altitude, long-endurance drones for ISR and strike roles in all Services. Most platforms will be assembled domestically by Indian firms. This shows a major strategic shift.

At the tactical level, commanders are restructuring infantry battalions around dedicated drone platoons. In 2025, the Army established specialised training institutions, denoting a shift from experimentation to institutionalisation. The Army is raising light commando formations with drones along both borders. A classified roadmap guides the assimilation of multiple unmanned aerial system types and loitering munitions. These moves show where the Indian Army allocates its strategic expenditures most aggressively.[2]

In the domain of counter-drone, India has developed credible indigenous capabilities. India tested a 30kW directed energy laser system in April 2025, which provides a cost-effective intercept at 5 kilometres.[3] In May 2025, a micro-missile counter-swarm system was tested for high-altitude intercept above 5 kilometres. A rapid-fire micro-missile platform handles short-range saturation threats. Mission Sudarshan Chakra, announced on Independence Day 2025, connects these parts together. This AI-enabled, tri-service architecture aims to network thousands of radars, directed-energy weapons (DEWs), and a unified Counter-UAS (C-UAS) grid into a single integrated response system by 2030–35. This will be an indigenous integrated air defence equivalent.[4]

India has enacted two main policies shaping military drones and defence. Mission Drone Shakti, introduced in Budget 2022, trained over a thousand candidates from 2023 to 2025. The mission, with a 5-year budget of INR 1,600–1,800 crore, promotes local manufacturing of motors, sensors, controllers, and new materials. This reduces import dependence. Mission Sudarshan Chakra aims to set up a networked defensive system by 2030 to 2035. These frameworks join technology, production, and defence. However, logistics are not fully covered, such as war stockpiles and last-mile delivery connecting all elements across India.

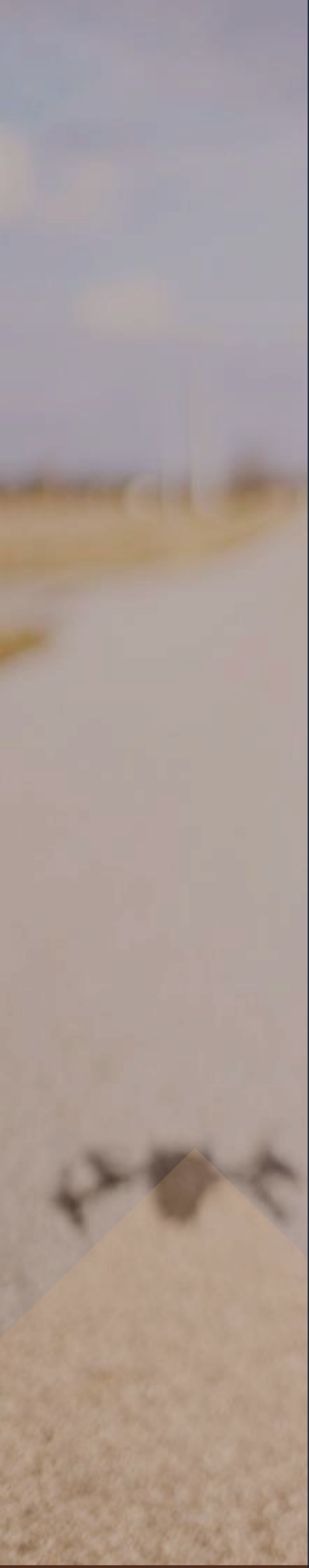
India's defence has historically been import-dependent[8] for high-volume procurement of advanced systems and platforms, rather than being indigenously produced at volumes that meet the requirements of the Armed Forces. This is a critical, underexamined vulnerability that could lead to severe consequences for the country during conflicts. Lessons from recent large-scale global conflicts point to an uncomfortable truth: wars are sustained by logistics, not merely won by the best technology.

Adversaries with inferior platforms but superior supply chains and pre-positioning doctrines have demonstrated a capacity to sustain prolonged operations. This tactic altered the course of the war and led to prolonged periods of tension and devastation[9]. India must internalise this lesson urgently for the near future.

A distinctive logistical challenge India faces is its multiple geography, which covers almost every terrain type. This prevents India from adopting a one-size-fits-all approach to national defence [10]. The high-altitude Ladakh valley presents battery deterioration and maintenance challenges that differ from those in the arid environment of Rajasthan. The North-east has dense canopy and communications blackouts that make standard logistics operations impractical. The 7,516 kilometres of coastline also accelerates electronics and surface degradation due to marine corrosion and humidity. Depending exclusively on a centralised production model—without forward-deployed, terrain-specific maintenance hubs and pre-positioned war reserves—is structurally incompatible with the operational circumstances of India's vast and complex geography.

It would be a mistake to treat indigenisation as the only prerequisite for operational effectiveness. The approach to indigenisation itself must be both top-down and bottom-up, ensuring that weapon development and logistics evolve simultaneously and in synergy to generate long-term operational advantage, while also accounting for future upgrades and evolving battlefield requirements. Alongside indigenisation, equal urgency must be placed on building a battle-ready last-mile logistics system that covers weatherproof transport and storage, hardened depot infrastructure, just-in-time forward repair capability, and war reserve planning, calibrated through standard operating procedures (SOPs) designed for high-tempo attrition rather than peacetime burn rates. India also needs to scale and geographically distribute a low-cost drone production ecosystem to eliminate single points of failure in the supply chain arising from external disruptions or attacks. At the same time, ensuring the robustness and longevity of this new supply chain can sustain future operational demands.

India's current drone fleet is growing, but it must match the production volumes needed for high-intensity conflicts. Today, domestic manufacturers show the potential to produce low-cost drones and loitering munitions.



These early signsare credible. However, resilient production requires geographically scattered networks across medium-capacity facilities. A dedicated Drone command should also be considered. Securing 15,106 km of land borders and 7,516 km of coastline via a central command is impractical in rapid saturation attacks. The practical approach is to establish a Joint Unmanned Operations Cell (10-12officers) under CDS for standardisation, procurement, and doctrine, like the functional purpose of the Ukrainian Unmanned Systems Force (USF). This enables unified, agile unmanned operations at scale during wartime.

The critical task ahead is to build an industrial and logistics system that supports high-speed aerial operations across all terrains. Drone warfare will not scale with new tech alone. It needs strong, spread-out supply chains that can withstand wartime shocks. India has started well. Now it must build logistics and industry to make this solid router ready for war and fast-growing threats.

This paper combines operational, industrial, technological, and organisational perspectives to argue that India's greatest vulnerability lies in logistics and sustainment rather than innovation. Batteries, semiconductors, critical minerals, repair cycles, field maintenance, distributed production, inexpensive interceptors, and war reserves will increasingly determine operational outcomes. Modern wars are no longer won merely by technological superiority. They are won by industrial depth, replenishment capability, and resilience under attrition.

Introduction

India stands at a crucial point in its defence readiness. The rapid global evolution of drone technology, the emergence of contested airspace in contemporary conflicts and the aggressive use of unmanned systems in recent wars have collectively raised the ultimate question: Is India adequately positioned to defend itself in an era of unmanned and autonomous warfare?

The above question may not be new; what is new is the urgency with which it confronts India with the need to catch up with current requirements. Over the last four years, the world has witnessed conflicts that strongly indicate that wars are no longer won by technological superiority alone. They are a result of a sustained backbone of robust logistics networks, the volume of indigenous production capacity, and the frameworks that seamlessly bind doctrines, sourcing, and operational readiness into a unified, self-sufficient system capable of prolonged operations.

The Broader Context: Focus Area

A significant number of policy analyses and defence commentary in India have highlighted lacunae in technological capabilities, import dependencies, and the urgency of indigenization across defence platforms. However, a limited number of such analyses and reports (as of Apr 2026) have shed some light on the on-the-ground readiness of India's defence ecosystem to sustain prolonged, high-intensity drone operations across contested airspace, such as the Russia-Ukraine conflict or the US-Iran conflict in recent times.

These prolonged global conflicts have highlighted a clear pattern: operations did not fail because the defending nation lacked technological skill or because its individual systems were inadequate. They fail when forward stocks are exhausted, when supply chains are disrupted, when the response cycle lags the intensity of swarm attacks, and when command structures are rigidly centralised, causing delays in decision making across dispersed theatres. These are not technical problems. They are institutional and administrative, and they are clearly dated.

What This Report Examines

This report analyzes India's evolving position withing the broader unmanned systems domain, air defense preparedness and operational preparedness in the context of modern conflict scenarios. It begins with an assessment of India's current drone warfare ecosystem across procurement, doctrine, training and deployment. Drawing on government data, military leadership statements and institutional developments inside the armed forces as of the date.

The report further evaluates the wide gap between India's expanding drone capabilities and the logistics architecture required to maintain prolonged, high-tempo operations across diverse terrains and multiple fronts. Special attention is given to lessons emerging from recent conflicts, where supply chain resilience plus sustainment capacity often proved as decisive as battlefield technology itself.

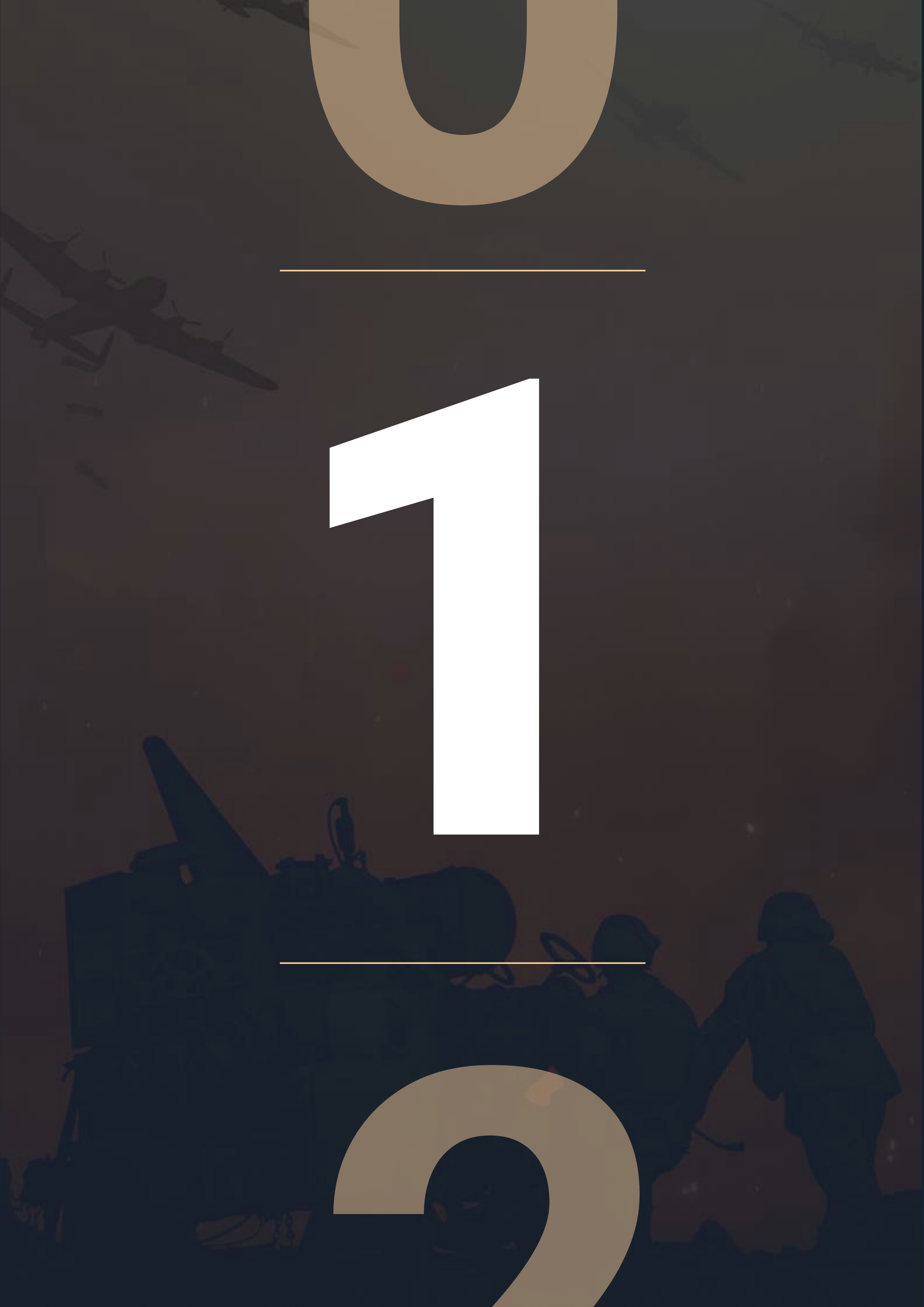
The report further analyzes structural reforms and operational models adopted by countries such as Ukraine, Israel, the United States, and Iran in the domains of production scalability, distributed supply chains, command decentralization, and cost-efficient warfare. It explains why India must move beyond technology acquisition alone and strengthen its war reserves through indigenization, forward logistics infrastructure, and a decentralized drone command center to achieve the long-term operational endurance required today. The report concludes with a series of five recommendations for policymakers and defense planners, aligned with India's latest strategic initiatives such as Mission Drone Shakti and Mission Sudarshan Chakra, to future-proof India's air defense posture.

Methodology and Research

This report draws on secondary research from published media reports, government announcements, defense analysis, military assessments, and analysis of recent conflicts. It incorporates primary consultation with subject matter experts and the collection of operator-level insights from a structured survey conducted among a small group of military personnel directly or remotely involved in drone warfare. The findings from these methods have been used throughout this report to identify critical ground-level operational circumstances, logistical limitations and preparation gaps that are often underrepresented in the publicly available literature and open-domain analyses.

The scope of the report is deliberately limited to the intersection of drone warfare capability, logistic readiness and institutional reforms. Other connected but separate topics, viz international drone regulations, cyber security of unmanned systems, or detailed technical specifications of individual platforms, fall outside the scope of this report, although they remain significant to the wider defense architecture.

Throughout this report, the underlying argument has remained consistent, i.e., India's path to drone warfare readiness is not blocked by technology or capability gaps alone. It is blocked by institutional obstacles about how production is organised, how commands are structured, how special units are positioned, and how doctrine translates into operational procedure. These are choices within India's control and demand urgent attention to future-proof India's defense setup. The analysis that follows is offered in that spirit, not as a prescriptive blueprint, but as a wayfinding sign for defense think tanks and decision-makers to transform India into a leader in this evolving domain.



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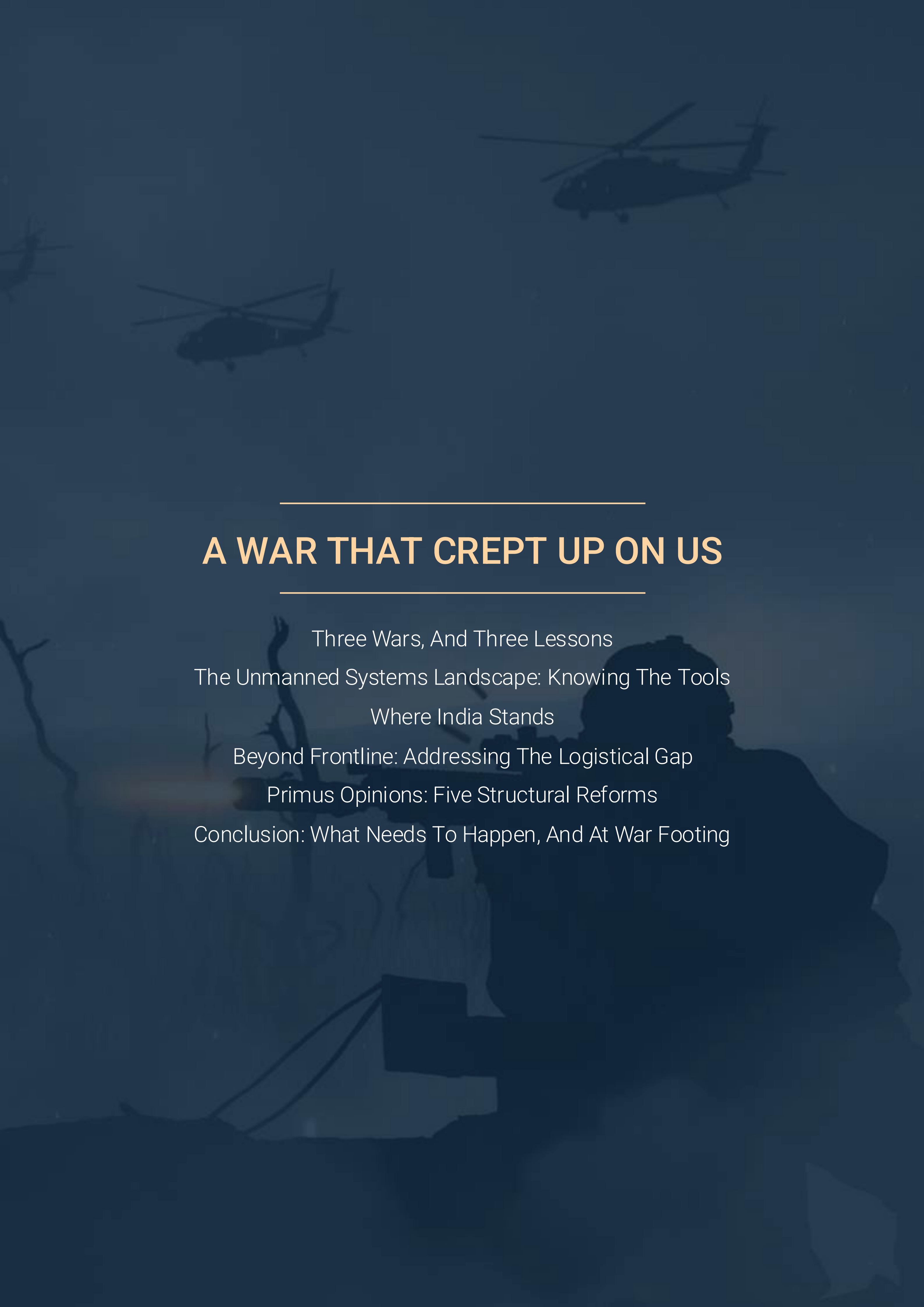
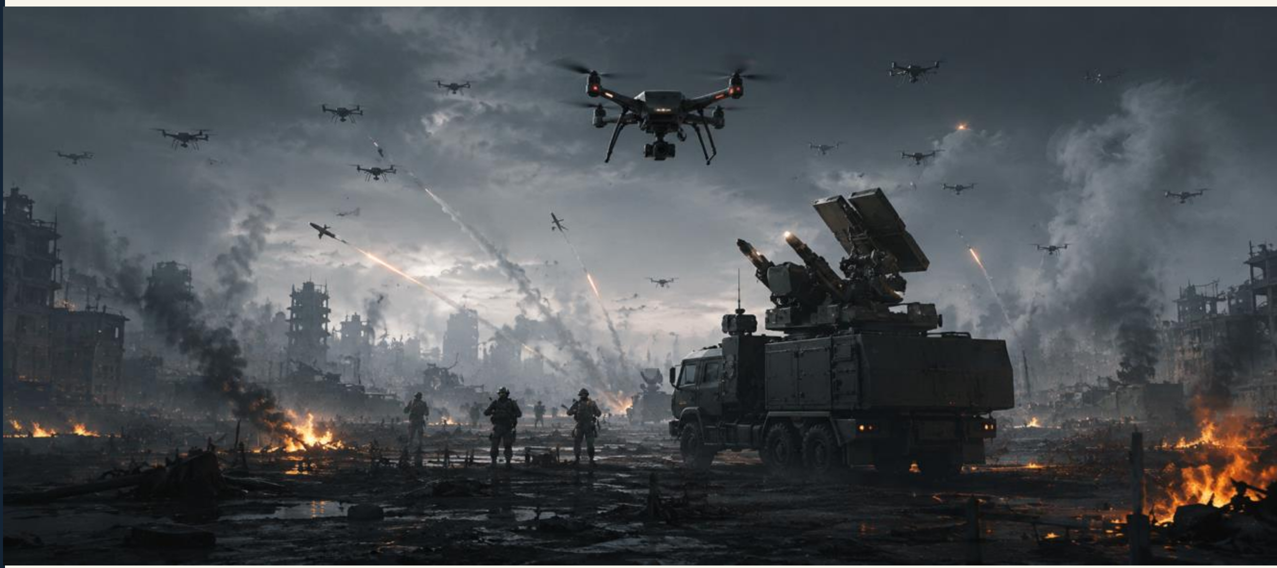


A WAR THAT CREPT UP ON US



In the wee hours of 8 May 2025, the western border reported what would become the first large-scale drone engagement between India and Pakistan.[11] According to published Indian government briefings, Pakistan launched a wave of several hundred unmanned aerial vehicles (UAVs) targeting Indian military and civilian sites along the border. India identified the Turkish-origin Asisguard Songar as among the deployed drones, with many of the basic drones functioning as decoys to saturate radar coverage and reveal air defence positions[12]. No Pakistani aircraft, not a single soldier, crossed the Line of Control (LOC) that night. This assault was carried out solely by unmanned systems.[13]

India's air defence system kicks in and absorbs the first wave of attack. The reliable S-400s, Akash batteries, and the Integrated Air Command and Control System (IACCS) are ready to deliver. Intercepting close to 90% of the incoming hostiles attacking in swarms.[14] The threat is desiccated by dawn. The important question is not whether we were able to stop the drones that night. It's about whether we can hold on for 30 more nights with the same inventory, supply lines, and standard operating procedures (SOPs). That is the question this article attempts to answer.

Why Specifically Drones? Why Now?

Since Operation Enduring Freedom in 2001, the concept of drone usage in modern warfare is no longer considered exotic military hardware. It started as an Intelligence, Surveillance, and Reconnaissance (ISR) platform for advanced nations, and within two decades, it became the tool of choice for every global conflict, border skirmishes, and a go-to option for mid-sized militaries with tight budgets. The drones employed in these clashes are increasingly built around low-cost commercial hardware and do-it-yourself kits, with rapid drop in prices of electronics, advances in AI, and easy access to technology enabling troops to customise them for specific operational environments. This convergence fuels the asymmetric dimension of modern warfare, where large conventional forces can increasingly be challenged and at times checkmated by small, decentralised, and inexpensive weaponized systems.

In a simple analogy, the same commercial quadcopter that captures wedding footage at a Delhi farmhouse wedding can be fitted with an RPG warhead and flown at a radar installation worth millions. This is not a hypothetical statement; it has been witnessed repeatedly in active conflict zones.

According to Fortune Business Insights, the global military drone market was valued at $14.14 billion in 2023 and is poised to reach $47.16 billion by 2032.[15] That exponential growth curve points to a fundamental shift in how war strategies are being reworked and prioritized. With the increased usage of drones in active combat roles, there is a drastic rise in the casualties linked with these UAVs. In 2025 alone, peace organizations recorded over 58,000 air and drone strike events globally, with nearly 33,000 deaths directly attributed to them.[16]

2

A War That Crept Up On Us

THREE WARS, AND THREE LESSONS

The Unmanned Systems Landscape: Knowing The Tools

Where India Stands

Beyond Frontline: Addressing The Logistical Gap

Primus Opinions: Five Structural Reforms

Conclusion: What Needs To Happen, And At War Footing

A large number of high-quality analyses and reports have been published on unmanned systems warfare over the last five years. Most of these articles focus on the types of drones used, namely the Baykar TB2, the Shahed, and first-person view (FPV) drones. However, a limited number of such reports have highlighted the other underlying aspects of drone warfare, i.e., the relationship between production capacity, logistics pipelines, and war endurance. Let us deep-dive further into the top three international drone conflicts to examine the importance of strategic production, robust logistics, and war reserves.

Azerbaijan vs Armenia, Nagorno-Karabakh (2020)

The Nagorno-Karabakh war is often cited as the moment drones went mainstream. Azerbaijan's deployment of Turkish Bayraktar TB2 platforms (~$2 million per unit) and Israeli Harop loitering munitions was a turning point in modern drone warfare. These attacks dismantled Armenian armour, artillery, and air defense systematically across a 44-day campaign. Armenia had entered this conflict without a meaningful drone capability. And eventually lost the territory it had held for over three decades.[17]

What is often missed in retrospection of this war is how critical it is to have a detailed drone strategy today. How the complete absence of a counter-UAV doctrine leads to an inevitable collapse of the military and its assets. Armenia's ground troops had no playbook for dealing with the incoming aerial threats combined with precision loitering munitions. The lesson wasn't simply to down the drones. It was about going into a conflict without a plan for drone attacks - like fighting blind while being watched.

Ukraine vs Russia: Industry-scale drones, Attrition, and the Supply Chain as a Target (2022–2026)

The Russia-Ukraine war is relevant to India because it highlights the importance of a wartime supply-chain backbone and the ability to produce drones at scale as operational demands shift. What began as a conventional mechanised invasion transformed within eighteen months into an industrial war of attrition. Where the production line became as important as the front line, and low-cost drone technologies enabled isolated units to open multiple fronts across a vast battlefield thereby stretching and thinning conventional military formations.

Ukraine's drone production trajectory went from roughly 800,000 units in 2023 to 2 million in 2024, with a stated target of 5 million units for 2025[18]. During this war, the popular tactical drone of choice was the FPV drone. Cheap, fast, and increasingly guided via optical-fiber reels to defeat jamming. It is important to note that Ukraine imported over $1 billion in Chinese-made drone components in 2024 alone, despite the supply chain becoming politically uncertain amid rising global tensions.[19]

Meanwhile, Russia was using a different playbook. They relied on sending waves of hundreds of Iranian-manufactured Shahed-136 drones (Russian designation Geran-2), which cost roughly $20,000 each.[20] Each interception by Ukrainian troops required a missile costing $1-$13 million. The arithmetic of this warfare was unsustainable due to a significant gap. Russia has since moved beyond the Geran-2's four-stroke ICE engine towards experimenting with jet propulsion to extend range and speed.

This conflict highlights three lessons for us to integrate into our policies. First, **volume matters** the most when trying to exhaust enemy interceptor stocks. Second, Russia's use of optical fiber FPV drones in late 2024 to strike Ukrainian supply trucks contributed directly to the Ukrainian withdrawal from Kursk because of **supply chain disruption**. Third, when China tightened export controls on drone components in 2024, the Ukrainian production stumbled. The **component dependency** on Chinese carbon fiber, rare earth magnets, lithium cells and chips was an underlying vulnerability that no amount of battlefield planning could overcome. From these three lessons, we can conclude that **industrial self-sufficiency is not a procurement goal, it is a combat multiplier** on the warfront.

Israel/ US vs Iran: Operation Rising Lion and Operation Epic Fury (2025–2026)

During the initial days of Operation Rising Lion by Israel, Iran launched approximately 550 ballistic missiles and around 1,000 drones at Israel.[21] As per a CBS News report, the IDF intercepted roughly 90% of the missiles and 99% of the drones that posed a direct threat. Thus, it prevented an estimated $15 billion in property damage.[22]Several technical analyses praise Israel's layered defense system, viz., Iron Dome, David's Sling, and Arrow, claiming it exceeds expectations. And yet the follow-on conflict, i.e., Operation Epic Fury, exposed something that headline interception rates have not brought to light openly. A 90-percent-plus intercept rate may sound like a victory, but due to Iran's sheer volume of salvos and loitering munitions, the prized Iron Dome was pushed beyond limits.[23]

Subsequently, in the initial 24 hours of Operation Epic Fury initiated by the United States of America on Iran, Iran in retaliation struck the UAE with 167 ballistic missiles and 541 drones[24]. Over the next ten days, approximately 2,410 missiles and 3,560 drones were launched. The United States is estimated to have spent 20-50% of its entire Terminal High Altitude Area Defense (THAAD) interceptor inventory positioned in the Gulf.[25] At $13 million per round, this proved to be a very costly campaign. Soon, the Gulf state's air defense stocks ran critically low within days.

Iran kept launching UAVs and missiles as it was adequately prepared to fight by the numbers, owing to decades of stockpiling and preparedness. Stockpiles were further dispersed across roughly 31 provinces before the first strike. Even with 92% of its known launch infrastructure destroyed or degraded, Iran still launched waves for weeks. That is not an advantage of geography or good luck; it is the result of a deliberate pre-positioning doctrine that accounted for the fact that fixed launch sites would not survive. Similarly, the Strait of Hormuz closure rippled through global shipping and energy markets in ways that no precision strike could match. This was clearly an economic warfare on a global scale conducted through drone volume and not mere military casualties.

The cost asymmetry between drones and interceptors used amounts to a critical, often overlooked weakness. This implies that no matter how good your air defense system is, it can be run dry by high-volume low-cost swarms.

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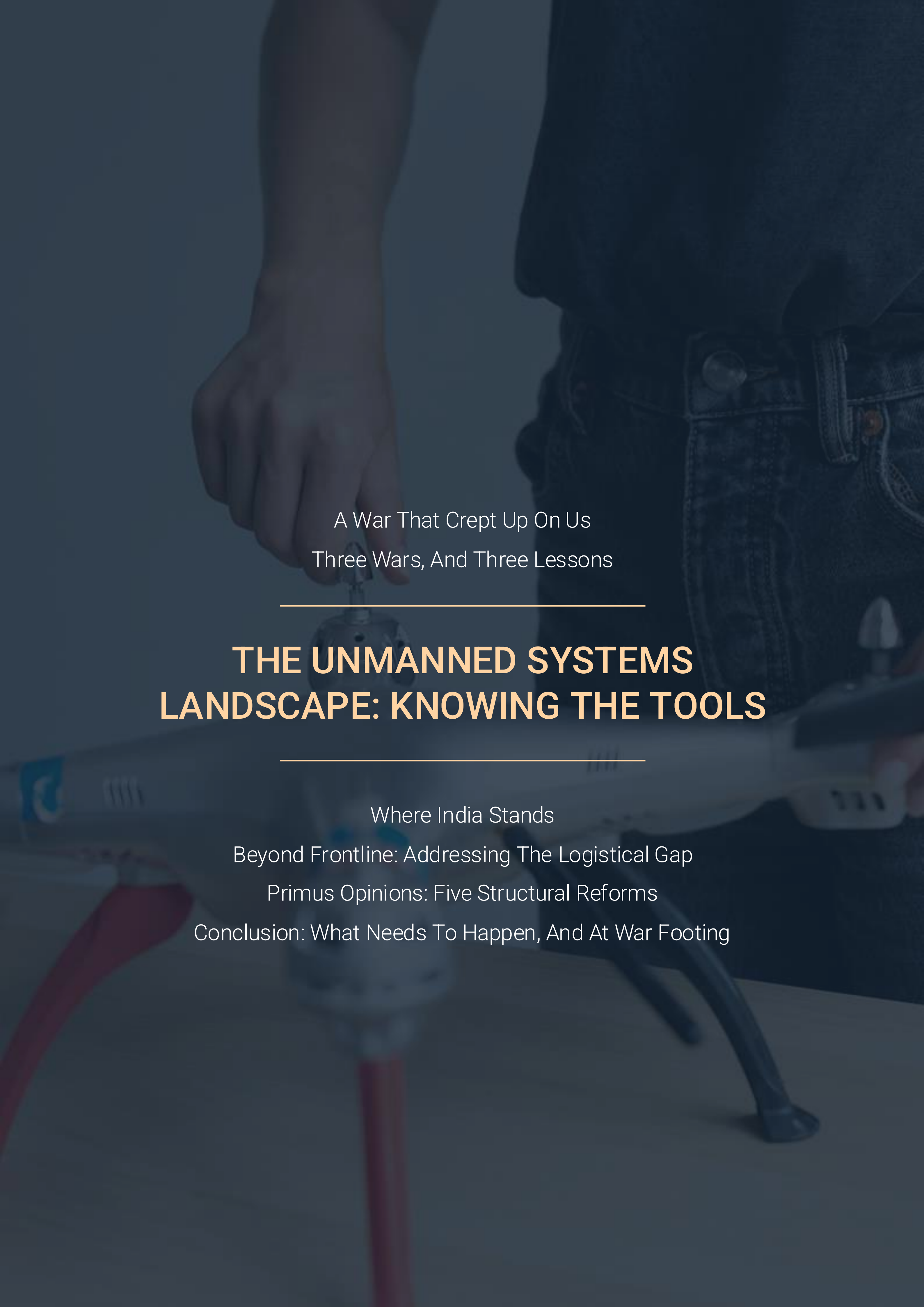

A War That Crept Up On Us

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India needs to have a concentrated approach toward drone warfare readiness. The first step towards this focus is to include a detailed classification of drone classes in the upcoming policies and doctrines, based on various operational parameters. Nowadays, the term “drone” is used frequently in public discourse, often referring to all unmanned systems in a single jargon. A sophisticated HALE/MALE drone for surveillance operations, a logistics-support quadcopter, and a one-way attack (OWA) loitering munition, despite all being labeled “drones,” each category serves fundamentally different military functions and mandates separate doctrinal responses.[26]

3.1 High-Altitude Long-Endurance (HALE) Platforms

HALE systems such as the US RQ-4 Global Hawk cruise at above 18,000 meters, deliver persistent Intelligence, Surveillance, and Reconnaissance (ISR) for up to 30 hours per sortie, and were originally designed for uncontested environments.

The MQ-9B Reaper/SeaGuardian, for which India has placed an order for 31 units at approximately ₹28,350 crore (or $3.5 billion), operates at a slightly lower altitude but is conventionally classified as a MALE, i.e., operating at medium altitude with a long endurance of up to 27-34 hours.

These platforms cost approximately $30-34 million per unit and serve as the backbone of persistent surveillance systems for the US and allied forces, deployed extensively across the Middle East and the Indo-Pacific, and now along India’s maritime formations.[27] A growing problem with HALE and MALE platforms in contested airspace has been observed in recent conflicts. In Yemen, Houthi forces armed with a makeshift arrangement of legacy surface-to-air missiles and Iranian-supplied systems managed to shoot down at least 6 MQ-9 Reapers between March 2024 and April 2025.[28]

During Operation Epic Fury, the United States lost at least 24 MQ-9 Reapers inside Iranian contested airspace, which is approximately 8% of its entire fleet. This resulted in a cumulative operational loss approaching $720 million.[29] This vulnerability is attributed to a limitation of HALE/ MALE drones, which operate at predictable altitudes and speeds, have large radar cross-sections (RCS), and depend on communication links. The International Institute for Strategic Studies (IISS) reported that Iran’s loitering surface-to-air missile, while limited against manned fighters, proved effective specifically against MALE UAVs.[30] The lesson is clear: high-value, non-stealthy UAV systems do not survive in airspace defended by modern air defense networks. The acquisition remains strategically valuable, provided these platforms are employed within survivability-aware operational doctrines, .i.e, only as a strategic ISR asset for the maritime domain or permissive environments and not as a platform to be risked in contested airspace over or along the Line of Control during high-level exchanges.

3.2 Medium-Altitude Long-Endurance Tactical Unmanned Combat Aerial Vehicle (MALE UCAVs)

The Turkish Bayraktar TB2 is the defining example of this sub-class. A MALE UCAV that proved decisive in the Nagorno-Karabakh conflict and in early Ukraine operations before contested airspace eroded its survivability. Priced at approximately $5-5.5 million per unit and available in over 30 countries, represents the remarkable development of armed drone technology. Turkey’s higher-end Akinci (an actual HALE-class multirole UCAV at $30–34 million a unit) adds a cruise missile-carrying capability and an Active Electronically Scanned Array (AESA) radar.

However, as operational studies have shown, even this state-of-the-art system has been downed by Kurdish PKK forces in Iraq and by Algerian air defenses in 2025. The lesson this sub-class offers India is to adopt a tiered deployment approach. Simply put, in a conflict scenario, MALE UCAVs should be tasked with stand-off strike and ISR roles from beyond the effective reach of adversary air defense, rather than being pushed into the forward threat envelope where cheap SAMs and loitering surface-to-air munitions await them.[31]

3.3 Tactical Drones and First-Person View (FPV) Systems

At the tactical level, FPV drones have redefined close-combat dynamics during the Russia-Ukraine conflict. Priced as low as $500 and $2,000 a piece, it is piloted in real time through goggles and often guided via optical-fiber reels to defeat electronic jamming. These systems are now the workhorse of trench warfare and the open battlefield vehicle of choice. Ukraine produced approximately 2 million FPV drones in 2024 and has targeted 5 million for 2025.

With individual units routinely delivering warhead-on-target effects against troops, armored vehicles, and supply trucks. Russia’s counterattack on Ukraine’s supply convoys using these FPV drones in late 2024 directly precipitated the Kursk withdrawal by Ukraine. This proves that this class of drone has moved from novelty to decisive operational instrument. Indian Army infantry battalions are now being restructured around drone platoons. These special groups must incorporate an adequate volume of this sub-class rather than treating it as a supplementary tool on the battlefield.[32]

3.4 Loitering Munitions and One-Way Attack (OWA) Drones

Loitering munitions lie midway between drones and cruise missiles. They are best exemplified by the Iranian Shahed-136, a one-way attack system with a 2,000-kilometer range, a 40-kilogram warhead, and a production cost of approximately $20,000 per unit. It is pre-programmed before launch and uses satellite navigation to reach its target. The Shahed is a fire-and-forget system, i.e., it cannot be remotely maneuvered once it flies beyond communication range. What it lacks in flexibility, it compensates for in production volumes and the economic disruption it can cause.[33] Russia has since evolved the design, introducing the Geran-2 variant with a Kometa-M jam-resistant navigation system.

Russia is known to be experimenting with a jet propulsion variant to achieve greater range and speed. Iran's own Shahed-161 is a stealth variant with a micro-jet engine and dual ISR/ strike capability, reflecting a deliberate evolution toward longer-lasting loitering munitions.[34] Israel's Harop and the US LUCAS (Low-Cost Unmanned Combat Attack System), which is inspired by the Shahed class, were rushed into CENTCOM service in December 2025. India's indigenous loitering munition ecosystem, developed by MSMEs, is producing at roughly ₹4.5 lakh per piece, at 400-500 units annually, which is a credible beginning. However, these numbers need to scale by at least four orders of magnitude to constitute a meaningful attrition capability and war reserve.

3.5 The Iranian Sequencing Model: A Template for Escalation

Perhaps the most significant doctrinal lesson from recent conflicts is not which drone was used, but in what sequence. Iran's drone campaign during Operation Epic Fury revealed a deliberate sequencing logic that planners and military thinkers globally would discuss for a long time.

The **first wave** deployed large numbers of low-cost Shahed-class OWA loitering munitions and basic quadcopters to saturate and locate air defence positions, forcing defenders to activate radars and expend interceptors as a natural reaction, thereby revealing both their location and their remaining inventory. The **second wave**, once defences were partially degraded and inventory-depleted, saw the deployment of tactical MALE-class systems and more sophisticated Mohajer-6 platforms in armed reconnaissance and precision-strike roles, targeting the infrastructure exposed by the first wave.[35] This was not improvised; it was a planned sequence, with each drone sub-class performing the role it was optimised for, in the order that maximized attrition on the defender.

The campaign also demonstrated how distributed and decentralized warfare architectures can continue functioning despite the degradation or even collapse of higher command nodes, thereby widening the asymmetrical nature of warfare. Much like the "Hydra" philosophy, where eliminating one node does not neutralize the network. These dispersed drone ecosystems can sustain operational tempo, impose heavy attrition, buy critical time, and amplify international political and diplomatic pressure on the adversary as the world has witnessed.

Iran's stockpiles were reportedly dispersed across 31 provinces before the first strike through pre-war readiness plans. This distributed stockpile ensured the campaign could be sustained even after 92 percent of its known launch infrastructure was destroyed. That is the advantage of pre-positioning, combined with a doctrine that assigns each drone class its precise role, in the engagement order.

India, while building its own unmanned systems architecture, must advance towards a similar sequencing doctrine which is specific to purpose and capability, from FPVs at forward deployment, to loitering munition layers at the tactical edge, through MALE platforms operating at stand-off range, and HALE ISR platforms operating well behind the threat envelope.


4

A War That Crept Up On Us

Three Wars, And Three Lessons

The Unmanned Systems Landscape: Knowing The Tools

WHERE INDIA STANDS

Beyond Frontline: Addressing The Logistical Gap

Primus Opinions: Five Structural Reforms

Conclusion: What Needs To Happen, And At War Footing

Since 2022, India’s momentum in unmanned systems capabilities has been increasing rapidly, with added thrust from the government. By mid-2024, the Indian armed forces had commissioned an estimated 2,000–2,500 drones into operational use. This is further backed by $361-421 million in investments in drone tech and a $3.5 billion order for 31 MQ-9B Predator HALE platforms to be shared across the three services. This step indicates India’s intent to improve its strategic prowess in this domain.[36]

In addition to the above, several programs related to drone warfare are happening at the tactical level. Infantry battalions are being restructured to incorporate dedicated drone platoons. The BSF Drone Warfare School established at Tekanpur in September 2025 serves as an indicator that drone warfare has moved from experimental groups to institutional units. Similarly, training institutions for Drone warfare and maintenance have started in Dehradun, Mhow, and Chennai. The Bhairav Light Commando Battalions, 250-strong, drone-enabled, raised on both borders[37], and a 50-page UAS and Loitering Munitions Roadmap covering 30 system types, released but restricted, show us where the Indian Army is pointing.[38]

India’s air defense system or counter-UAV systems are also evolving. Notable mentions are- DRDO's Shahastra Shakti, a 30kW directed-energy laser tested at a range of 5 km in Kurnool in April 2025. Bhargavastra, the micro-missile counter-swarm system tested in May 2025, adds a defense layer suited for altitudes above 5,000 meters. During Operation Sindoor, the S-400/Akash/IACCS grid intercepted close to 90% of incoming drone swarms. That is a number on par with global strike rates.

The Policy Frameworks Strengthening India’s position

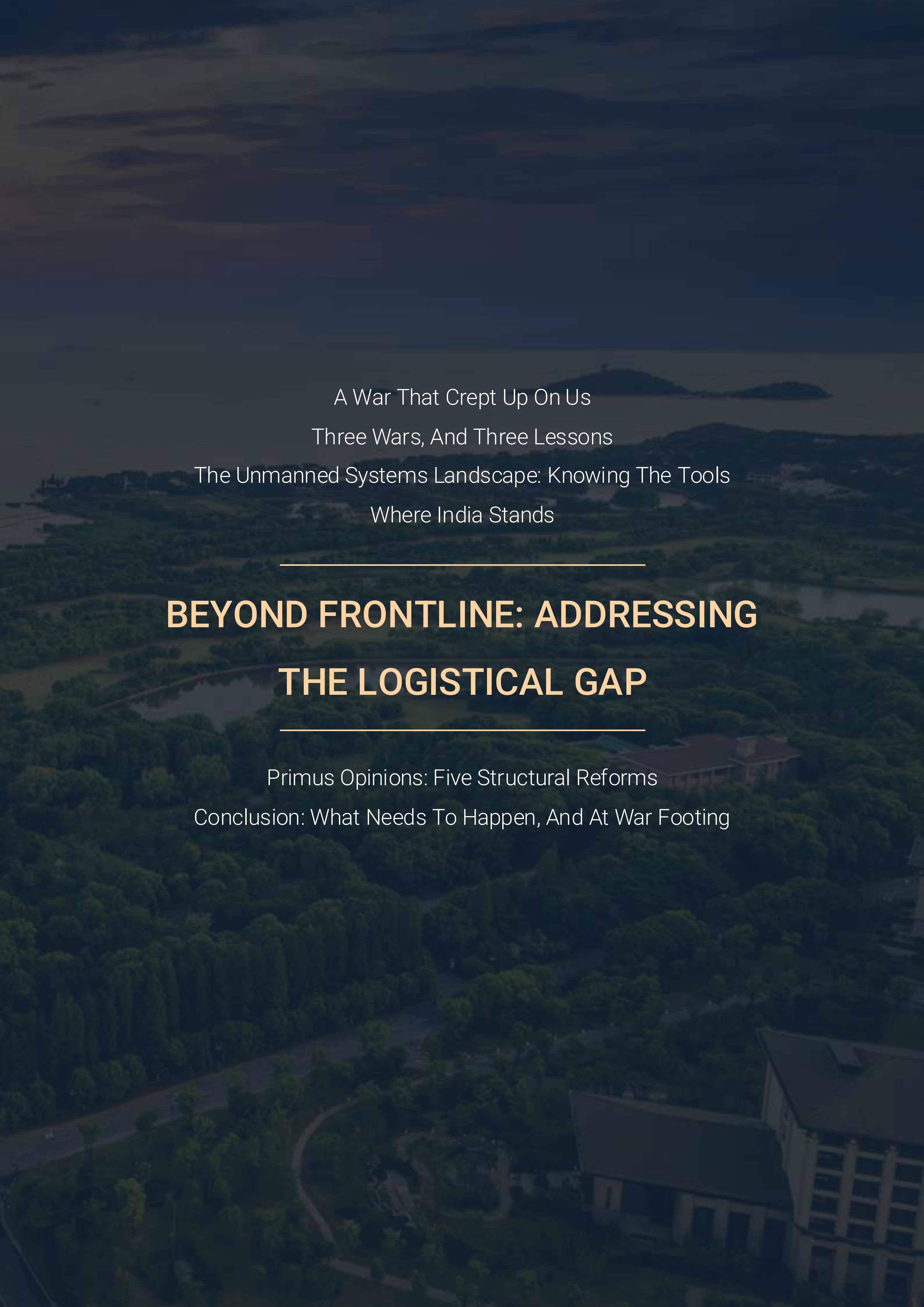
Drone Shakti Mission (Union Budget 2022):

This initiative has a dual purpose: building human capital in the drone sector while fostering a drone services startup ecosystem. Official figures show 1,096 candidates trained in drone related skills under the Craftsman Training Scheme (CTS) scheme in the 2023–25 period[39] This is a focus program on domestic component manufacturing - motors, sensors, carbon fibre etc., is a direct response to reduce India's dependence on imported component supplies, making us truly self-sufficient in drone production.

Mission Sudarshan Chakra (Announced Independence Day 2025):

India’s most ambitious air defense integration project, similar to the Iron Dome. The project aims to network 6,000–7,000 radars, S-400 batteries, directed-energy weapons (DEW), and a unified tri-service Counter-UAS grid into a single AI-enabled response system. This may sound far-fetched at first read, but India is slowly gearing up for a phased deployment from 2030 to 2035.

5



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> ***The most advanced drone in the world is useless if it cannot reach the soldier who needs it, and when they need it***

India's defense approach has largely focused on technology adoption first, followed by volume, with a light focus on attrition-oriented till now.[40]There is another crucial factor, apart from the recent global conflicts, that many experts have not focused on until recently. This is about war-ready logistics encompassing all aspects for sustained battle, viz., decentralised supply chain, creation of war reserves, and focus on low-cost systems. Logistics isn't just about getting things from the factory to the frontline; it's also about meeting any requirement, where and when needed. The importance of possessing this type of all-round logistics and the quick deployment of low-cost systems surfaced during the peak Russia-Ukraine and Israel/US-Iran conflicts.

In late 2024, Russia used drone attacks, resulting in the Ukrainian withdrawal from the Kursk region.[41] This was a result of the logistics disruption that manifested at the worst possible moment. Similarly, Iran was able to stretch the retaliation for weeks, even when almost 92% of its known missile infrastructure was destroyed due to its robust war-ready logistics plan and stockpiling.

India's vast terrain makes the application of the above conventional logistics a challenge. The difficulties at the front-line positions in the Ladakh valley are not like those of the arid western borders and so on. At high altitudes, batteries degrade sharply, and anyone who has served in such postings knows that even vehicle maintenance becomes a different ballgame in such sub-zero environments. Another scenario is the North-eastern regions, which present a different set of problems, viz., dense canopy, communication disruptions, and non-existent roads, among others. Moving towards the shores, the open 7,516 km Indian coastline provides a corrosive, humid environment that inadvertently degrades electronics and systems.

Although mission Drone Shakti addresses manufacturing indigenisation striving to delink import dependencies. What should also be addressed more systematically is the operational enigma known as “last mile delivery”. As brought out in a report from the MP-IDSA, ***“logistics and sustainment must be treated as the two strong pillars of warfare rather than afterthoughts”.*** The report highlights that a conventional centralised production cluster design, without forward-deployed terrain-specific maintenance hubs, will lead to catastrophic outcomes comparable to those in the Ukrainian operations mentioned earlier. The only differentiator will be the scale of this catastrophe (as India's total area is roughly five times that of Ukraine).

Thus, it is safe to say that this emerging gap between an indigenised production cluster and a war-ready logistics network is significant. The task of bridging it requires pre-positioned, weatherproof stockpile infrastructure paired with just-in-time forward repair capabilities. And to achieve this, one must adopt a planning pattern that accounts for high-tempo attrition, not peacetime practice burn rates. In simpler terms, we need to stop planning for the opening day of a conflict and start planning for a thirty-day war. Period.


6

PRIMUS OPINIONS: FIVE STRUCTURAL REFORMS

Drone warfare, including counter-defense, is evolving faster than existing doctrines can keep pace. If India wants to secure an edge in future wars, it must move beyond incremental solutions and adopt a set of five battle-tested reforms drawn from diverse, real-world combat conditions.

A Scale Up Low-Cost Drone Production, and Distribute the Manufacturing Base

According to estimates, India's current military drone fleet is roughly 2,000–2,500 units.[42] This is a number that might raise some eyebrows in the defence expert's circle. In comparison with Ukraine, whose total land area is nearly one-fifth of India's, it produced 2 million drones in 2024 alone. And their future target is 5 million! This is such a colossal difference in numbers that any comparison becomes almost absurd.

India has placed numerous orders to equip all three arms of the Indian defence forces with surveillance UAVs. This is primarily because India is still making breakthroughs in drone component manufacturing and has yet to match the global benchmarks. Similarly, the indigenous, low-cost, expendable drone production is slowly but surely advancing toward industrial scale. Recent news claims that an Indian drone MSME is churning out loitering munition drones priced around ₹4.5 lakh per unit, at a rate of 400–500 units per year. Another player has successfully tested a swarm drone (1,000 km range). There is a leading South India-based drone R&D and manufacturer that is also making anti-drone interceptors (under $500 per unit, under a partnership with the Indian Army). All these numbers from local producers serve as positive indicators rather than baby steps towards a future-ready drone industrial ecosystem.

A key factor that made Ukraine resilient in the war was the geographic distribution of drone manufacturing units. Several smaller, dispersed facilities across areas made it possible. This also posed a near-impossible challenge: taking down the entire production line with a single enemy strike.[43] India needs to build the same kind of distributed manufacturing facilities across different regions. A distributed network of medium-capacity, standardised, and scalable production layouts is the way ahead for a resilient supply chain needed for drone warfare.

Coupled with this, the shift from a "just-in-time logistics" to a "just-in-case reserve" stance is another lesson we can learn from the US - Iran conflict. Pre-positioned stockpiles at hardened forward depots can provide a continuous supply for weeks during a high-tempo conflict. Alternatively, this plan can also be utilised to provide cover for vulnerable assets such as cities, historical monuments, oil refineries, offshore rigs, and defense establishments etc.

B

Standardised Systems and Designated Unmanned Systems Units for Integrated National Defence

> *For the want of a nail… the battle was lost.*

Securing India's land borders and coastline simultaneously is not practical for a centralised command during a high-tempo conflict. A distributed operational layout where multiple theatres coordinate and function independently based on immediate tactical needs is far more effective to protect India's borders, coastlines, assets and interests. The core weakness of rigid centralisation is decision latency, a vulnerability that adversaries can exploit during fast-moving swarm attacks.

The sequence of events during Operation Sindoor back this argument. Forward positions without autonomy or layered counter-drone networks remained exposed under sustained attrition. Traditional human-in-the-loop cycles simply cannot match autonomous drone threats operating at machine speed, making AI-assisted decision loops and decentralised engagement protocols an operational necessity. The approach towards decentralisation without standardisation is equally dangerous. Interchangeable systems and common/ modular drone technologies enable large-scale production, ease of maintenance, reduce supply-chain strains, and allow rapid redeployment across theatres without compatibility friction, all of which can sustain operational tempo in prolonged conflict effectively.

Ukraine's establishment of the Unmanned Systems Forces (USF) in 2023- the world's first dedicated drone branch, offers a proven reference point. The USF focused on standardised procurement, training, AI loops, and battlefield logistics, while integrating drone units within existing command structures. India's three Integrated Theatre Commands could adopt similar methodology, though formalisation must move at a faster pace than the current transition timeline indicates. At the operational level, this means drone units at division level across all borders and coastlines, not just corps-level formations, scaling the BSF Drone Warfare School model across all three services, and integrating drone platoons into a unified architecture under the CDS. The goal is not simply more number of drones but to possess a standardised, interoperable, theatre-integrated ecosystem built to sustain high-tempo operations across India's vast and varied battlespace.

C A Serious Counter-Swarm Strategy

Not a few, but hundreds of low-cost drones were launched by Iran over American bases during the initial waves of Operation Epic Fury.[47]The UAE's interceptor system was not designed to track and engage this type of high-density track. The algorithm saturates, causing decision latency and allowing some drones to slip through. A similar approach was attempted by Pakistan during Operation Sindoor, not to defeat India's air defense but to saturate it through layered waves, burning through missile stocks and stretching response cycles. India held up well, but the economic margins were deeply unfavorable.

As time goes by, India's emerging counter-swarm ecosystem is more developed than most public commentary states. The Bhargavastra's 20-meter kill radius and detection range of 6 -10 kms makes it practical at high altitude. Sahastra Shakti laser, a 30kW DEW with a 5 km range, offers a cost-per-engagement profile that makes sense against $20,000 attrition drones. The decade-long DRDO system, called DARE, fires 64 micro-missiles in rapid succession at a range of 2.5 km to address short-range threat scenarios. The Joint C-UAS Grid under Mission Sudarshan Chakra will, once operational, tie these independent marvels into a unified detection and response network across all three services.

The missing binding material seems to be a doctrine that connects all the above into a self-sufficient ecosystem. Operation Sindoor was a tactical victory, but it was run under a mission-specific task force assembled for that contingency.

Replicating that at scale, permanently for defensive purposes, across the full perimeter of India may be possible through a joint drone warfare doctrine. The current doctrines are not fully exhaustive in addressing all three lessons from global conflicts. There is also another question of cost asymmetry, which might require deliberation at the government level. India's imported high-end interceptors and ISR drones cost a substantial fraction of the defense budget, and the budget cannot continue to increase every year.[48]

There is an urgent need to shift the investment priority towards high-volume, indigenous, low-cost countermeasures. The I2U2 framework (India, Israel, UAE, US) and QUAD offer economic avenues for technology sharing and joint development that have not been pursued as hard as the global dynamics warrant today.[49]

D “Micro-Drone Swarms” as an Offensive and Defensive Complement”

If the Shahed-136 proved the power of low-cost one-way attack systems in volume, the next aerial threat is undoubtedly towards micro-drone swarms. Coordinated, autonomous clusters of drones capable of overwhelming air defences and striking distributed targets even in communications-denied environments by virtue of internal communications and numbers. The strategic logic is straightforward, a single MQ-9B worth $30 million is one target, whereas 500 micro-drones at $500 each represents a similar outlay but presents the defender with nearly 500 simultaneous decision problems. No intercept system today be it missile, laser, or gun, can handle this kind of targets without algorithmic saturation.[50]

Swarm technology has moved well past proof-of-concept. In 2026, AI-powered swarms with edge computing can autonomously adapt and continue operations even after losing contact with the control node.[51] The US Replicator program ($500 million, FY2024) allows a single operator to manage diverse autonomous swarm units. Ukraine has been the live testing ground since 2024 for this technology.

India's indigenous swarm ecosystem is early but credible. DPSUs have developed autonomous swarming for surveillance, the Navy has conducted maritime swarm trials, and a South Indian firm has tested a collaborative loitering swarm with a 1,000-kilometre range.[52] The SAKSHAM counter-UAS grid, fielded in October 2025, includes AI-enabled 3Dvisualisation and predictive threat analysis designed specifically for swarm scenarios.[53]

Dr VK Saraswat of NITI Aayog and former Secretary of DRDO has signalled that the next phase targets swarm fleets in the hundreds to overwhelm adversary airspace.[54] That ambition now needs a dedicated swarm doctrine, swarm defense protocol, distributed micro-airframe stockpiles, and AI mission-planning tools capable of tasking swarm elements without individual human authorisation at each engagement node.

E The Next Generation of Counter-Drone Methods - Beyond Hard Kill and Soft Kill

The hard kill / soft kill binary has anchored counter-drone thinking for a decade, but neither method is sufficient alone. Hard kill consisting of missiles, lasers, shells, or interceptor drones is decisive but expensive and volume-limited. Soft kill which covers RF jamming, GNSS spoofing, and command-link disruption is economical but increasingly defeated by drones engineered to operate without a radio link. Optical-fibre FPV systems are the clearest example: communicating via an ultra-light fibre line reaching upto ~30km from its launch point, the system emits no radio signal and is completely invisible to RF detection, jamming, or GNSS disruption.[55] This single engineering development has effectively closed the soft-kill window for an entire and rapidly growing class of battlefield drones. India's counter-drone doctrine must explicitly acknowledge this shift rather than continuing to treat soft kill as a reliable first-line response.

Four emerging approaches within India's R&D sector must be supported and fast-tracked to fill this gap.

The first is cognitive electronic warfare, moving beyond brute-force RF jamming toward AI-enabled systems that examine a target's signal in real time, identify its frequency-hopping pattern, and dynamically adapt the jamming waveform to overpower it.

This precision protocol disruption — targeting only the specific link of the rogue drone without blanking the entire spectrum — is already available with several Western and Israeli manufacturers.[56] India's SAKSHAM system already integrates AI-driven soft and hard-kill responses within a unified command node. The logical next step is extending SAKSHAM's architecture to include cognitive jamming techniques rather than operating on static preset modes.

The second is cyber-RF takeover — commandeering a hostile drone rather than destroying or jamming it. By establishing secure communications and seizing control of the flight controller, the drone can be directed to land safely or, where tactically viable, turned against adversary units. A captured drone yields far more than its airframe: its guidance logic, waypoints, and payload configuration represent a strategic intelligence dividend that a destroyed drone never provides.[57] This approach, being developed by multiple private-sector firms, is simultaneously a defensive tool and an intelligence asset.

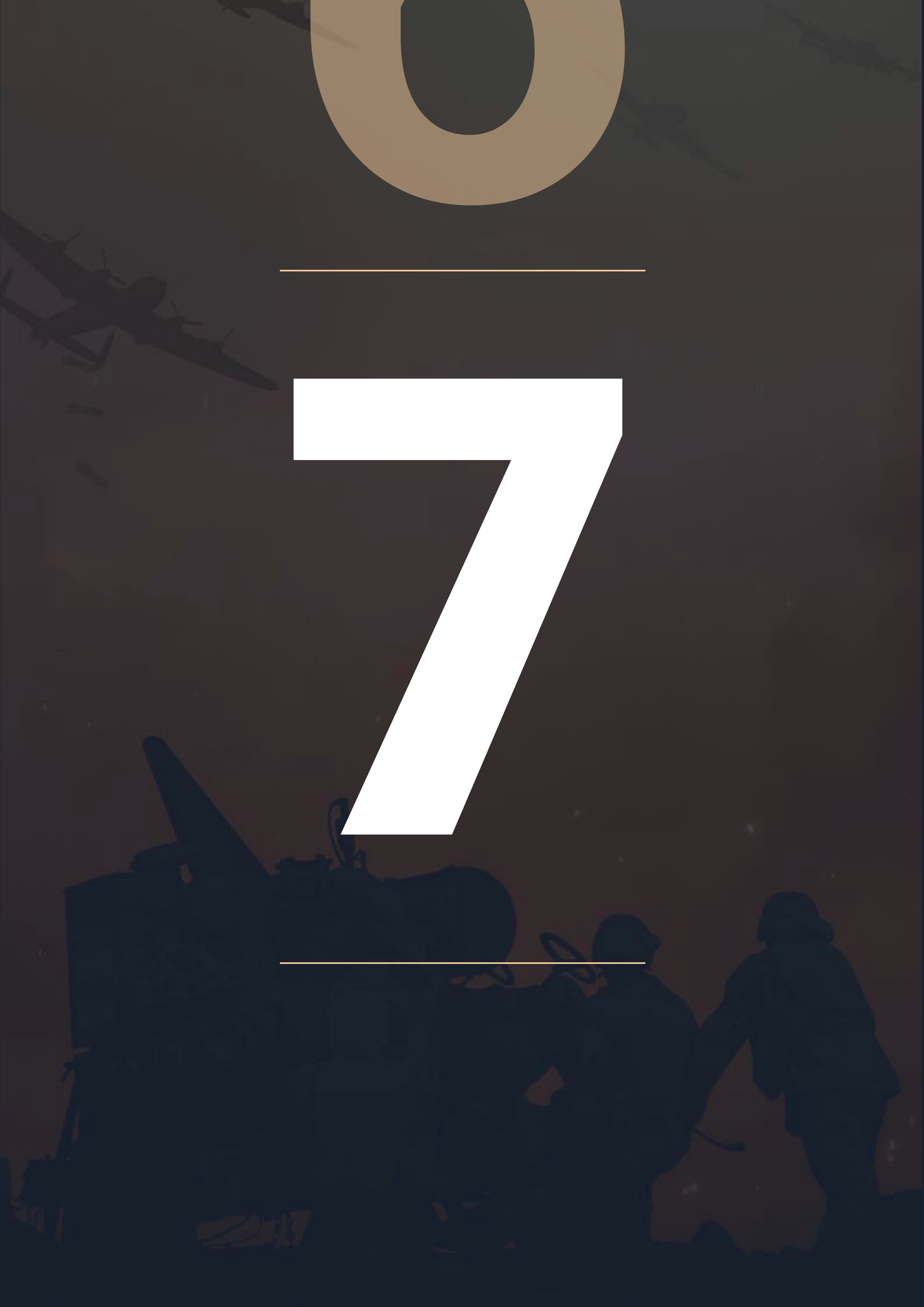
The third is acoustic detection layered with AI-powered sensor fusion. India's VARAHA system, unveiled in November 2025, takes an entirely different detection philosophy — a distributed acoustic sensor array that uses AI to triangulate the position of an incoming drone in under two seconds, with zero electronic emissions of its own.[58] This makes VARAHA untargetable by radiation-seeking munitions, a critical survivability advantage as adversaries increasingly develop drone swarms specifically designed to hunt active emitters. Combined with AI-enabled sensor fusion platforms such as the SkyOSgrid, this stealth CUAS concept can secure up to 4,000square kilometres of airspace — pointing toward a defence architecture that is not merely responsive, but fundamentally harder to locate and degrade.[59]

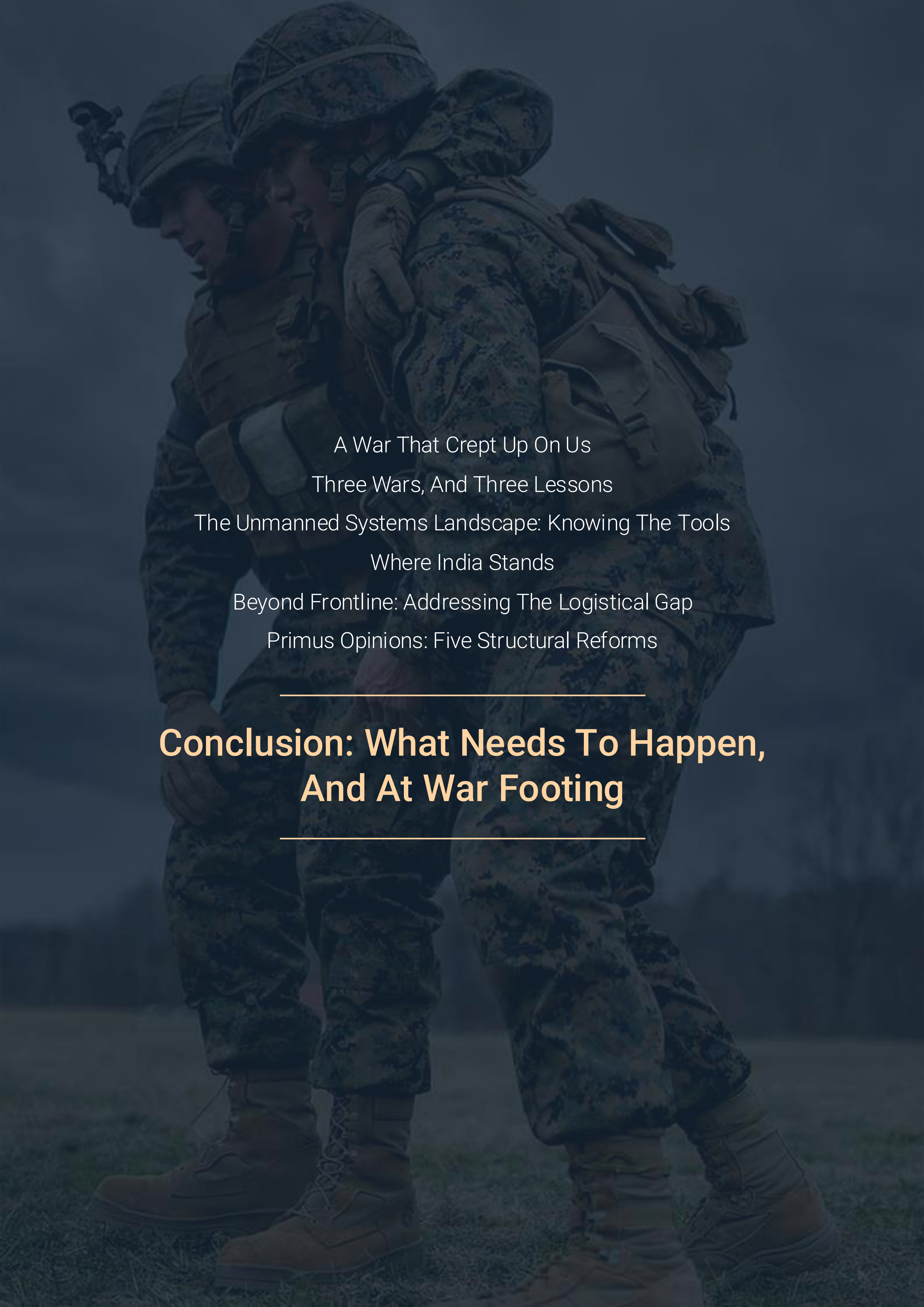
The fourth is the drone interceptor ecosystem. India is developing Kevlar net-carrying interceptor drones for non-kinetic capture of hostile systems, alongside drone-on-drone ramming platforms for hard-kill engagements in urban or infrastructure-dense environments where collateral damage is a constraint.[60] Unlike single-use missile interceptors, these systems are AI-enabled, recoverable, and redeployable, a decisive logistical advantage in high-attrition scenarios. The Coyote 3NK variant, deployed in September 2025, represents the global benchmark for a loitering interceptor capable of engaging multiple targets in sequence before returning for rearmament.[61] India must prioritise developing an indigenous equivalent within Mission Sudarshan Chakra's phased procurement plan.

The thread connecting all four approaches is a decisive shift away from point defence tactics towards a connected-architecture model,. One where any sensor in the network can enable or trigger any effector, anywhere, without the engagement decision being delayed by a single human operator, or human-in-the-loop decisions. The detect-track-identify-mitigate sequence, when automated across a sensor-fused grid, compresses response time from minutes to the seconds that swarm warfare demands.

Mission Sudarshan Chakra's ambition of networking 6,000–7,000 radars, directed-energy weapons, and a unified C-UAS grid into a single AI-enabled system by 2030-35 is precisely the right vision. The roadmap to realise it must now explicitly incorporate the state-of-the-art technologies available to us, cognitive electronic warfare, stealth acoustic detection, interceptor drone ecosystems, and AI-driven kill-chain automation, technologies that already exist within India's reach and simply need the doctrine and urgency to match.

07





Conclusion: What Needs To Happen, And At War Footing

In 2025, drone-related casualties were a staggering 33,000 worldwide. In addition to this, various economic disruptions attributed to drone warfare included civil aviation interruptions, oil refinery attacks, billion-dollar data centre targets, etc. All of it was achieved with these drones, which cost less than a new SUV in India. Our country shares land borders with two nuclear-armed states that are both investing heavily in drone warfare capacity as we read this article. The burning question that arises is - when India faces a drone-centric conflict, will it be able to handle all aspects of a multi-layered attrition warfare?

India's real risk is not that it lacks ideas. It is that its drone debate can still become too platform-centric. The strategic chokepoints are upstream and downstream: critical inputs before production, and sustainment functions after induction. CSIS's 2025 analysis of drone supply chains identifies five structural vulnerabilities: materials, propulsion, batteries, semiconductors and sensors, and logistics. It explicitly argues that industrial resilience has become combat power. The Ministry of Heavy Industries said in 2025 that almost the entire domestic demand for advanced-chemistry cells was still met through imports, and in 2026 that India remained highly import-dependent on critical minerals such as lithium. Semiconductor policy is moving fast, but the government's own roadmap still allocates a large share of domestic chip capability to the future, not the present.

Mission Drone Shakti and Mission Sudarshan Chakra are deliberate, well-directed policy efforts implemented recently. They strive to address technological and modern-warfare gaps through practical solutions in government initiatives. What they can further build on is a complete logistics and deployment doctrine. A formal framework that seamlessly connects production output to forward deployment through arm-specific (Army, IAF, Navy), terrain-specific MRO, pre-positioned war reserves along all borders, islands, and coastlines. And a last-mile delivery network hardened and calibrated for high-tempo attrition warfare akin to Operation Epic Fury.

A centralised drone policy and capability framework at the Integrated Headquarters (IHQ) and Integrated Defence Staff (IDS) level, combined with the integration of dedicated drone units down to operational and frontline formations across all borders and coastlines, is non-negotiable given India's vast geography, diverse terrain, and multi-front security scenarios. Given the pace at which drone threats are evolving globally, we as a nation need to transition from the centralised response model to a design suitable for saturation attack scenarios now being rehearsed by adversaries. Logistics architecture must therefore become geography-specific rather than centrally standardised.

And lastly, the cost asymmetry must be directly addressed as a strategic priority from the nation's budgetary perspective. The logic of firing an imported $13 million interceptor at a locally produced $20,000 drone is not a sustainable defensive reaction, even for developed countries, as seen in recent conflicts. The mandate to embrace the indigenisation effort must be enforced at all levels to achieve high-volume, robust, low-cost counter-swarm technology. Building upon what DRDO and the private sectors have already demonstrated is achievable.

CSIS's 2025 analysis of global drone supply chains puts the above argument simply: drone warfare does not scale through innovation alone; it scales through manufacturing depth reinforced by supply chains that can survive a conflict.[62] India has already ignited the innovation cycle. Startups, military reforms, indigenous technologies, and political commitment have collectively accelerated the country's drone ecosystem. Yet the next phase will not be won through innovation alone. Wars are sustained by logistics, not merely by technology. The future battlefield will reward nations capable of maintaining operational endurance amid prolonged attrition. Batteries, repair systems, distributed manufacturing, semiconductors, inexpensive interceptors, and resilient command structures will increasingly determine strategic outcomes

India, therefore, faces a historic opportunity. It can become not merely a manufacturer of drones, but a resilient unmanned warfare power capable of sustaining high-intensity operations across multiple theatres and geographies. The defining question is no longer whether India can build drones. It is whether India can sustain them when the war refuses to end quickly.

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Primus Partners has been set up to partner with clients in 'navigating' India, by experts with decades of experience in doing so for large global firms. Set up on the principle of 'Idea Realization', it brings to bear 'experience in action'. 'Idea Realization'— a unique approach to examine futuristic ideas required for the growth of an organization or a sector or geography, from the perspective of assured on ground implementability.

Our core strength comes from our founding partners, who are goal-oriented, with extensive hands-on experience and subject-matter expertise, which is well recognized in the industry. Established by seasoned industry leaders with extensive experience in global organizations, Primus Partners boasts a team of over 250 consultants and additional advisors, showcasing some of the finest talent in the nation.

The firm has a presence across multiple cities in India, as well as Dubai, UAE. In addition, the firm has successfully executed projects across Africa, Asia Pacific and the Americas.

India Offices

Bengaluru
91 Springboard Business Hub 175, 176 Bannerghatta Rd, Dollars Colony, Bengaluru – 560076

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4th Floor, Netsmartz, Plot No. 10, Rajiv Gandhi Chandigarh Technology Park, Chandigarh – 160019

Chennai
147, Pathari Rd, Door #3, WorkEz Hansa Building, RK Swamy Centre, Thousand Lights, Chennai, TN - 600006

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1 to 7, UG Floor, Tolstoy House, Tolstoy Road, Connaught Place New Delhi - 110001

Kolkata
Collab Deck (Cabin W1021) Kankaria Center, 2/1 Russel Street, Park Street Area, Kolkata - 700071

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156/157, 15th Floor, Nariman Bhavan, NCPA Road, Nariman Point, Mumbai – 400021

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