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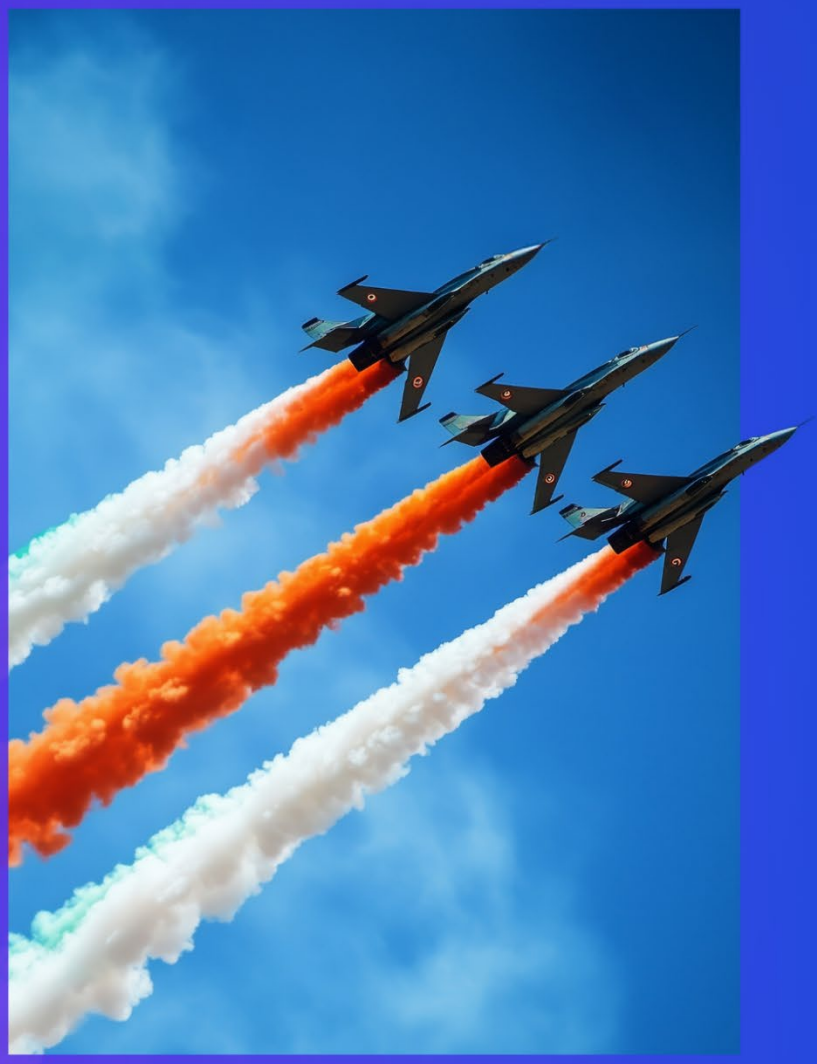
Confederation of Indian Industry

Atmanirbhar, Agrani, and Atulya Bharat 2047

India's Defence Industrial Sector Vision 2047



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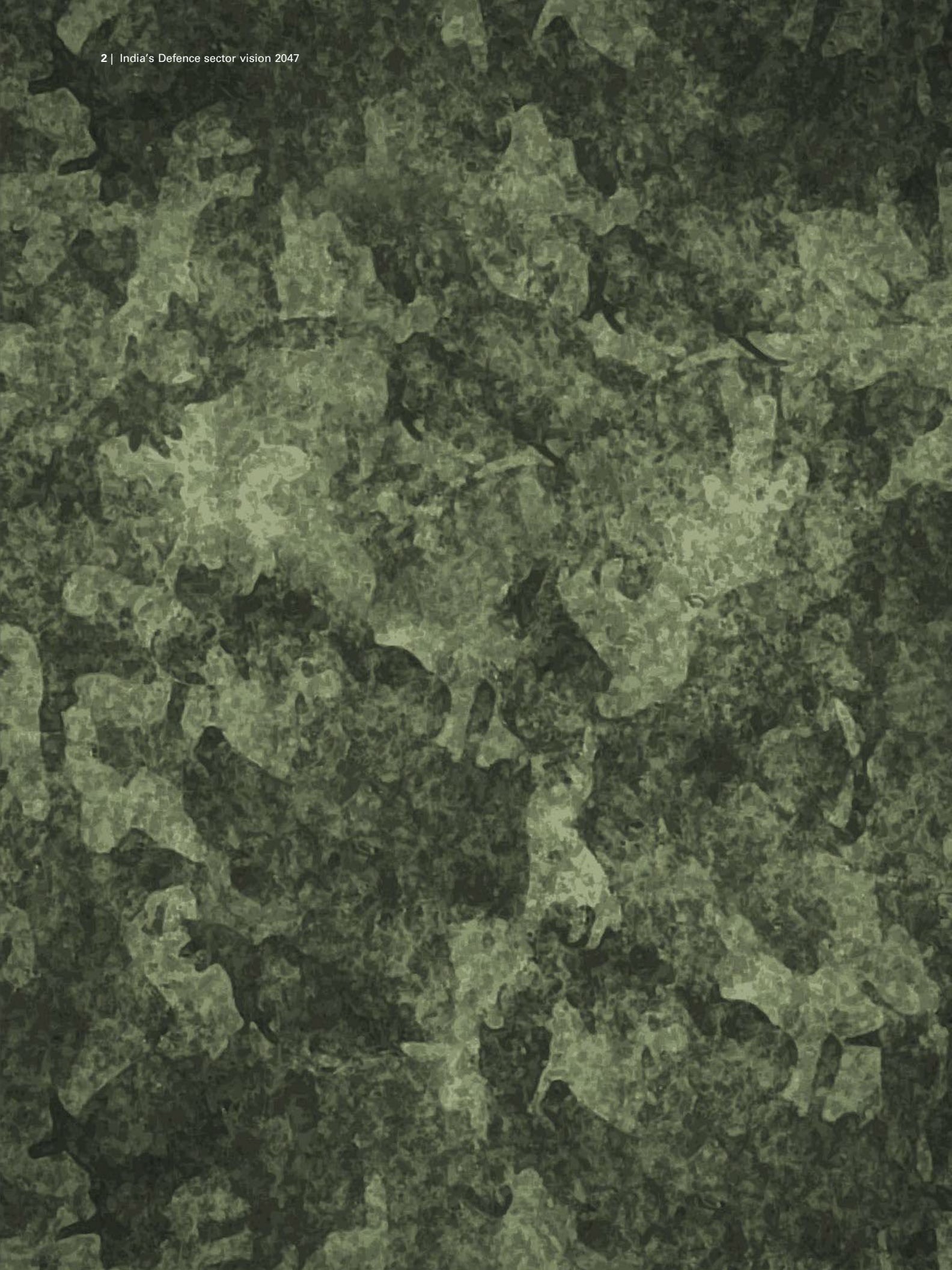


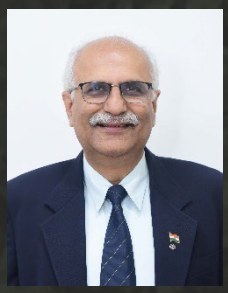
Foreword-CII

The National Committee on Defence of Confederation of Indian Industry (CII) is pleased to present a comprehensive thought leadership on India's Defence Vision 2047. This strategic initiative embodies our shared commitment to nurturing innovation, fostering self-reliance, and achieving global excellence in the defence manufacturing landscape. Aligned with CII's vision for the defence sector in 2047, resonating closely with the essence of the vision proposed, our goal is to establish a thriving ecosystem that encompasses key elements such as advanced technology integration, sustainable growth, strategic partnerships, and skilled workforce development. This unified vision of "Atmanirbhar, Agrani, and Atulya Bharat 2047" symbolises India's quest to emerge as a frontrunner in defence manufacturing, equipped with cutting-edge capabilities and a resilient supply chain infrastructure.

Drawing on CII's extensive industry expertise and research insights and connect with key stakeholders from the Defence Sector, we recognise the imperative of collaborative efforts between stakeholders including government bodies, Armed Forces, academic institutions, industry leaders, and global partners. Through a concerted focus on innovation, indigenisation, and strategic alliances, we aim to realise a future where India's defence sector not only meets domestic requirements but also competes on a global scale.

With these strategic recommendations, we are poised to address critical gaps, amplify operational efficiencies, and drive sustainable growth within the defence sector. The approach harnesses the potential of key capabilities such as Research and Development (R&D), talent cultivation, production enhancements, regulatory frameworks, partnerships, and infrastructure development, whilst laying the foundation for a resilient and competitive defence industry by 2047.

I would like to put on record our appreciation for KPMG for being the knowledge partner in developing this report with CII. Our Sincere thanks to SIDM members for their contribution and support.



Arun Ramchandani

Chairman
CII National Committee on Defence

Foreword-CII

India's defence sector stands at the cusp of a generational transformation, and it is an honour to contribute to this landmark Defence Vision 2047, which captures the strategic aspirations of our nation with remarkable clarity and conviction. As the Founder President of the Society of Indian Defence Manufacturers (SIDM) and Past Chairman of CII's National Committee on Defence, I have witnessed firsthand the evolution of India's defence industrial base—from policy infancy to the emergence of a capable, confident and a vibrant ecosystem.

This document recognises a vital truth: national security and industrial strength are deeply intertwined.

The Hon'ble Prime Minister's vision of an AatmaNirbhar Bharat and a Sashakt Bharat have set the strategic direction for Indian Industry involved in the Defence Sector. Translating this vision into reality demands a systematic push across innovation, capital investment, R&D, export readiness, and skilling. The recommendations outlined here set a clear agenda for how India can not only reduce dependency on imports but also become a credible supplier to the world.

The Indian private sector, supported by a reform-oriented policy environment, has shown its capacity to design, develop, and deliver complex defence systems. What we now need is acceleration—of funding, partnerships, and trust. With industry, government, and the armed forces aligned in purpose, the goal of making India a global leader in defence manufacturing by 2047 is both achievable and necessary.

Baba N. Kalyani

Chairman & MD,
Bharat Forge Ltd.
Founder President, Society of Indian Defence Manufacturers (SIDM) Past Chairman,
CII National Committee on Defence

Foreword-CII

India's defence sector is undergoing significant changes. Over the past decade, policy reforms, strategic investments, and a vision for self-reliance have established the basis for a robust domestic defence industry. The Government's emphasis on self-sufficiency in defence, along with its commitment to indigenisation, has fostered an environment conducive to innovation, manufacturing, and exports in this sector.

Today, India is not only one of the largest defence spenders globally but also amongst the fastest-growing defence manufacturing ecosystems. The significant increase in defence exports, enhanced private sector participation, promotion of start-ups, and the creation of defence industrial corridors reflect the country's growing capability and ambition in this space.

This thought leadership document is a collaborative effort to chart a forward-looking roadmap for building a self-reliant, technologically advanced, and globally competitive defence sector by the time India completes 100 years of independence. It brings together insights on critical enablers such as R&D, talent development, regulatory reforms, infrastructure, and strategic partnerships.

We extend our sincere appreciation to KPMG in India for their support as a knowledge partner in the preparation of this important document.

Additionally, we acknowledge the valuable contributions and domain expertise provided by the Society of Indian Defence Manufacturers (SIDM), which have greatly enhanced the content and context of this work.

CII is dedicated to collaborating with the government, industry, academia, and the Armed Forces to make India a global leader in defence manufacturing.

Chandrajit Banerjee

Director General,
Confederation of Indian Industry

Foreword-CII

The vision of Atmanirbhar Bharat is not just a slogan but a clarion call for the Indian defence industry to innovate, collaborate, and excel. As the President of the Society of Indian Defence Manufacturers (SIDM), I firmly believe that the strategic vectors outlined—enhancing Self-Reliance, becoming a major Defence Exporter, and achieving Global Leadership in niche technologies—are the pillars that will propel India into the league of advanced defence economies. This seminal report comes at a pivotal moment when India's defence sector stands at the cusp of transformational growth, with defence production reaching scaling new heights and exports, driven by Private Industry, surpassing a record INR 23,000 crore.

The Indian defence industry has made significant strides in recent years, with increasing private sector participation, growing indigenous capabilities, and a robust policy framework under initiatives like Make in India and Positive Indigenisation Lists. However, as this report highlights, challenges such as technological dependencies, R&D gaps, and regulatory complexities persist. Addressing these will require a concerted effort from all stakeholders—Government, Armed Forces, Industry, Academia, and Research Institutions.

As the Apex body of the Indian defence industry, SIDM is committed to fostering collaboration, advocating for policy reforms, and facilitating the growth of a vibrant defence ecosystem with special focus on MSMEs and Start-ups. The recommendations outlined in the report present a clear direction for strengthening India's Defence Industrial Base. Moving ahead, focused efforts on enhancing R&D capabilities, skill development, infrastructure modernization, and building strategic partnerships will be the key. The proposed National Defence Technology and Innovation Framework (NDTIF) offers a valuable opportunity to institutionalize innovation and accelerate India's progress in emerging and critical Defence technologies.

As we march towards 2047, stepping into 'Amrit Kaal', let us reaffirm our collective resolve to build a defence sector that is not only Self-Sufficient but also a Global benchmark for excellence. This report from CII serves as a guiding light, and I urge all Stakeholders to embrace its recommendations with urgency and dedication. CII and SIDM will continue to collaborate further on the deliberations.

Together, we can realize the vision of an Atmanirbhar, Agrani, and Atulya Bharat—India that stands tall as a Defence manufacturing powerhouse on the world stage.

Rajinder Singh Bhatia

President
Society of Defence Manufacturers

Foreword-KPMG in India

It is with a strategic foresight that we present this thought leadership on India's Defence Vision 2047, which encapsulates a transformative roadmap for the sector. As we navigate through a landscape defined by seismic global shifts and ever-evolving security challenges, the need to formulate and execute a comprehensive strategy for the defence sector has never been more pressing.

The vision of 'Atmanirbhar, Agrani, and Atulya Bharat 2047' embodies India's ambition to become a foremost power in global defence manufacturing. This vision beacons clear and actionable steps to realise this bold objective where the strategic vectors delineate this vision into concrete goals that collectively pave way for India's progression.

The foundation of this vision is based on the understanding that India's pursuit of defence manufacturing excellence requires more than just technological progress. It necessitates a comprehensive strategy that combines advancements in research and development with the goals of indigenisation, global competitiveness, sustainability, and strategic partnerships. Achieving this vision relies on the concerted efforts of key stakeholders, including government bodies, Armed Forces, research institutions, academia, industry leaders, and international partners. Their collective involvement is crucial to fully realise this strategic vision.

The key capabilities that serve as focal points of this vision have been identified to be in six areas of intervention that form the scaffolding of the Indian defence manufacturing sector – R&D and innovation, talent and skill development, production capabilities, regulatory and procurement processes, strategic partnerships and infrastructure. This thought leadership delves into the current state and existing gaps of the strategic vectors, finally recommending actionable steps with implementation timelines within each capability that address these gaps, in our quest for achieving our vision of Viksit Bharat by the year 2047.

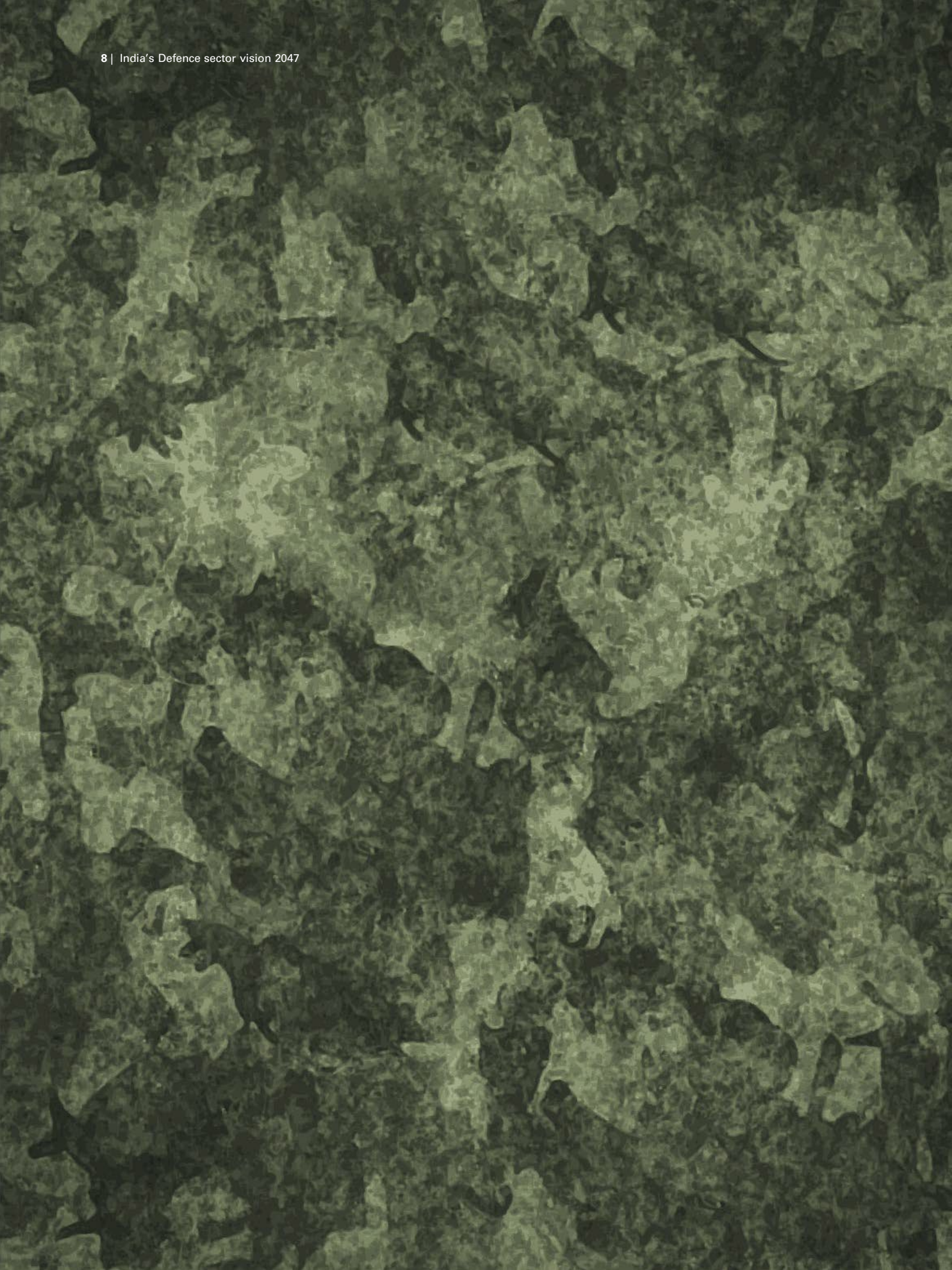
With fostering alignment and collaboration among diverse stakeholders at the heart of this endeavour, we have the opportunity to pave the way for a thriving, self-reliant, and globally competitive defence industry that will underscore India's stature as a formidable force in the 21st century.

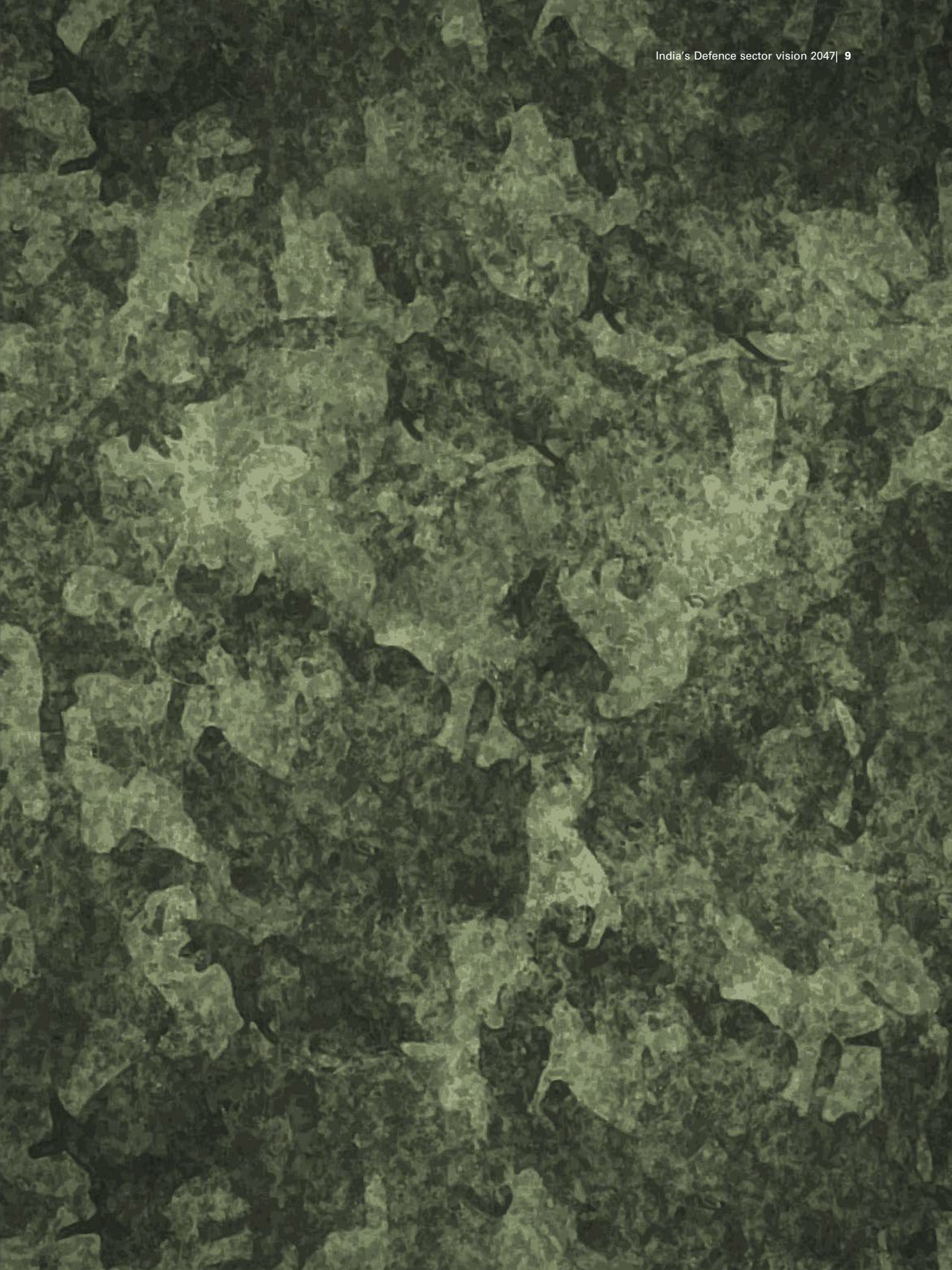
Gaurav Mehndiratta

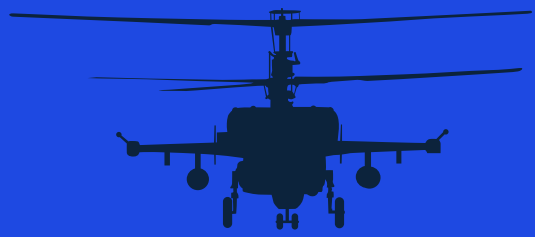
Partner and National Head
Aerospace, Defence & Space
KPMG in India

Cdr Gautam Nanda

Associate Partner,
Aerospace, Defence and Space
KPMG in India







Executive summary

As we stand at the precipice of pivotal global shifts and escalating security challenges, it is imperative for India to envision and implement a comprehensive roadmap that will propel its defence sector to unprecedented heights, contributing towards vision of Viksit Bharat by the year 2047. Charting this path requires a multi-faceted strategy that identifies and prioritises development in key areas of intervention imperative for the actualisation of this strategic vision.

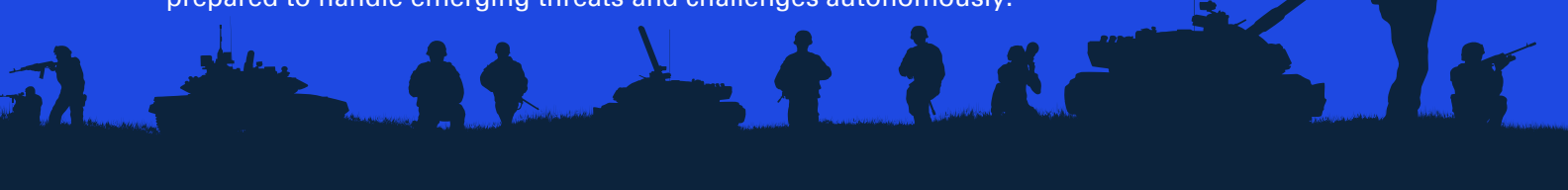
The vision of 'Atmanirbhar, Agrani, and Atulya Bharat 2047' aims at guiding India towards becoming a leading nation in the global defence landscape by:

1. Achieving a high degree of self-reliance in critical defence capabilities,
2. Becoming a prominent global exporter, and
3. Pioneering advancements in niche technologies which will affirm India's leadership in cutting-edge sectors especially in non-kinetic warfare domains.

Figure 1: Vision Framework

Strategic vision	**Atmanirbhar, Agrani, and Atulya Bharat 2047** India envisions becoming a global leader in the defence landscape by achieving self-reliance, excelling as a prominent exporter, and pioneering advancements in critical niche technologies.		
Strategic vectors	**Short term (2025-2031)**	**Medium term (2032-2038)**	**Long term (2038-2045)**
	Achieve maximum **self-reliance** and **indigenisation**	Become **major defence exporter**	Become a **global leader in niche technologies**
Strategic capabilities required	Invest in **fundamental and applied R&D**	Foster **quality talent and skill-set** in fields of technology, engineering and production.	
	Strengthen **defence production capability** and **supply chain resilience** across the value chain	Streamline **regulatory and procurement processes**	
	Build **strategic partnerships and collaborations**	Enhance **infrastructure and accessibility**	

Achieving enhanced self-reliance in defence capabilities is the foundation upon which the vision stands. By focusing on critical areas for indigenous development, reducing reliance on foreign technology, and fostering innovation through robust domestic R&D, India can build a strong, independent defence infrastructure. This foundational self-reliance ensures that India is well-prepared to handle emerging threats and challenges autonomously.



Striving to become a global export leader in defence equipment and technology is another crucial pillar supporting the vision. By expanding international partnerships, complying with global standards, and actively promoting Indian defence products overseas, India aims to mark its presence in the global defence market. This objective boosts the economic stability of the country whilst enhancing its strategic leverage globally.

Finally, the commitment to pioneering advancements in niche defence technologies underscores India's dedication to innovation and technological leadership. By fostering collaboration among industry, academia, and government, and investing in advanced R&D, India is poised to lead in developing and deploying next-generation technologies. Leveraging the strength of the young STEM community in the country, India can aspire to be a pioneer and emerge as a leader in the non-kinetic warfare domain which will define the nature and outcome of future conflicts. This strategic vector ensures that India remains at the forefront of technological advancements, securing its competitive edge in the global arena.

To fully realise this transformative vision for India's defence sector, it is essential for key stakeholders such as the Government, Armed Forces, industry, research institutions, and academia to align their efforts and expertise. A whole-of-ecosystem approach would be necessary, wherein facilitating free flow of collaboration, knowledge exchange, and synergistic partnerships among these pivotal entities is crucial in propelling the sector towards success.

As we delve deeper into this thought leadership, we aim to shed light on the critical areas that require intervention and underscore via recommendations the pivotal roles that each stakeholder must undertake in shaping and executing a visionary blueprint for India's defence manufacturing sector by 2047.There are various crucial areas of intervention that form the bedrock of the vision of Vikshit Bharat of 2047.

In Research and Development (R&D), emphasis needs to be laid on increasing investment to 10-15% of total defence expenditure by 2032, with a strategic focus on critical technologies like AI, quantum computing, and cyber defence. The thought leadership also advocates for the establishment of a National Defence Technology and Innovation Framework (NDTIF) to drive collaboration, innovation, skill development, and bolster indigenous manufacturing for a more competitive defence manufacturing ecosystem. Simultaneously, efforts in talent and skill development must aim to bridge skill gaps through specialised programs, scholarships, internships, and attractive compensation packages, with a strategic emphasis on incentivising the return of skilled expatriates through appealing roles, relocation support, and global networking initiatives.

Moreover, enhancing defence production capabilities seeks to reinforce India's standing through measures such as financial support, resilient supply chains, quality assurance, and export promotion. This includes increased funding, technology transfers, adherence to global standards, and diplomatic engagements to expand exports whilst enhancing the country's reputation as a reliable player in the defence manufacturing industry. Regulatory and procedural reforms play a pivotal role in propelling the sector forward by advocating a transparent framework, adaptive policymaking, streamlined procurement processes, industry-friendly reforms, strong IP protection, and optimising resource allocation to enhance frontline capabilities.

Lastly, strengthening strategic partnerships with advanced nations, focusing on technology agreements, technology transfer mechanisms, collaborative ventures, and incentivising private sector participation in international collaborations, while also bolstering infrastructure by expanding testing facilities, establishing Centers of Excellence (CoE), enhancing cybersecurity measures, and embracing advanced manufacturing technologies, are also paramount for driving innovation and global competitiveness in India's defence industry.

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A. India's Defence Vision 2047

As per the visionary roadmap, India aspires to transform into a developed nation by 2047. Central to this ambitious goal is the critical role of the defence manufacturing sector, which will be pivotal in ensuring national security and fostering technological advancements. Strengthening India's defence sector is not merely about augmenting military capabilities, but also about boosting indigenous innovation, enhancing self-reliance, and developing a robust defence manufacturing industry. Enhanced defence preparedness will secure the nation's sovereignty, foster strategic autonomy, and drive economic growth, thereby making significant contributions toward realising the vision of a prosperous, secure, and self-reliant India by 2047.

The Indian defence industry is on a growth path, driven by a combination of strategic initiatives and pressing security needs. However, achieving the vision of India as a developed nation by 2047, particularly through a strengthened defence sector, faces several roadblocks and challenges. Firstly, budgetary constraints could limit the necessary investments in modernising the Armed Forces and developing indigenous military technologies. Additionally, regulatory red tape and procedural quagmire often slow down defence procurement and indigenous R&D initiatives, creating inefficiencies.

Dependence on defence imports for critical technologies remains a significant challenge, hindering self-reliance and innovation in the domestic defence manufacturing sector. Furthermore, there is a shortage of skilled manpower to drive advanced technological developments and manage sophisticated defence systems. Another issue is the geopolitical tensions that pose constant threats and could divert focus and resources away from long-term development goals. At the same time, India's strategic position in South Asia, as the geopolitical and economic leader of the global South in the past decade, has doubled down on the need for a robust and responsive defence stance.

Fostering robust public-private partnerships is necessary but complex, as the private sector needs incentives and support to enter and sustain in the defence manufacturing domain. Intellectual Property (IP) rights and technology transfer issues with foreign collaborators also present obstacles in achieving self-reliance.

Addressing these challenges requires strategic planning, increased budget allocations, streamlined procedures, robust policy frameworks, and fostering a culture of innovation and collaboration between the public and private sectors.

1.1. Vision statement

Atmanirbhar, Agrani, and Atulya Bharat 2047

'*India envisions becoming a global leader in the defence manufacturing landscape by achieving self-reliance, excelling as a prominent exporter, and pioneering advancements in critical niche technologies.'*

The vision for 2047 reflects the Indian defence manufacturing sector's commitment to becoming a symbol of economic and technological strength with a prominent global presence. This vision underscores the sector's ambition to elevate India's influence and stature on the world stage through cutting-edge technological advancements, economic resilience, and strategic self-reliance. By achieving these goals, the sector aims to significantly contribute to India's overall growth and consolidate its standing within the global defence industry.

1.2. Strategic vectors

The vision of *'Atmanirbhar, Agrani, and Atulya Bharat 2047'* is a manifestation of India's aspirations to emerge as a leading nation in the global defence hierarchy. The articulated vision serves as a guiding beacon for setting clear, actionable steps towards achieving this ambitious goal. The strategic vectors break down this vision into specific objectives that, collectively, forge a strategic pathway for India's advancement:

- **Achieve enhanced self-reliance in defence capabilities by 2032:** To achieve a high degree of self-reliance in defence production and capabilities by targeting critical areas for comprehensive indigenous development, reducing dependence on foreign suppliers, and fostering innovation through domestic R&D and manufacturing excellence.
- **Become a major exporter by 2038**: To position India among the top 05 global exporters of high-quality defence equipment and technology by expanding international partnerships, meeting global standards, and vigorously promoting Indian defence products in international markets.
- **Achieve global leadership in critical niche technologies by 2045:** To become a world leader in developing and deploying cutting-edge niche technologies across the defence sector by encouraging collaboration between industry, academia, and government, and driving substantial investments in futuristic R&D.

By staying committed to these vectors, India can turn its visionary aspirations into a powerful reality, which is expected to translate in the following milestones:

Milestone parameters	2025-26 (E)	2047
Defence budget	INR 6.8 lakh crores	INR 31.7 lakh crores
Defence production	INR 1.6 lakh crores	INR 8.8 lakh crores
Defence export	INR 30,000 crores	INR 2.8 lakh crores
Capital expenditure of budget	27%	40%
Total R&D spend	4%	8-10%
Percentage of total GDP spent on defence	2%	4-5%
Global rank by defence expenditure	4th	3rd

B.

Strategic Vectors

Collectively, the strategic vectors underpin the vision of a self-reliant, prominent, and unparalleled India by 2047. They provide a clear roadmap, outlining the steps necessary for India to realise its goals and establish itself as a powerhouse in the global defence manufacturing landscape.

1.1. Achieve enhanced self-reliance in defence capabilities by 2032

India's strategic environment and security requirements have long highlighted the necessity of a robust and self-reliant defence manufacturing sector. Accomplishing self-reliance in the sector is imperative in eliminating reliance on foreign suppliers, a practice that may otherwise compromise strategic autonomy as well as lead to delays in procurement due to geopolitical vulnerabilities resulting in cost escalations.

The 'Atmanirbhar Bharat' initiative aimed to bolster domestic industries and reduce dependence on imports, particularly in the defence sector. Under the policy, the government took several measures such as:

- 2025 is announced as the Year of reforms.
- Implementation of Public Procurement (Preference to Make in India) Order 2017
- Various other State Governments introducing exclusive policies for aerospace parks
- There is a priority for domestic procurement, emphasis is placed on procuring capital items from domestic sources under the Defence Acquisition Procedure (DAP)-2020
- Higher preference for locally manufactured defence equipment in both capital and revenue procurements where 75% of the capital procurement has been earmarked for the domestic sources
- Greater minimum Indigenous Content (IC) requirements in the capital acquisitions
- Promulgation of 05 positive indigenisation lists with a total of 509 items earmarked to be purchased from Indian industry only. Similar 05 lists of 5,012 items were published by the Defence Public Sector Undertakings (DPSUs), with restriction on imports beyond stated timelines
- Simplified industrial licensing process with longer validity period
- Encouraging Research and Development (R&D) through - a) innovations for Defence Excellence (iDEX) scheme involving Micro, Small and Medium Enterprises (MSMEs) & start-ups, b) Technology Development Fund (TDF) for supporting innovation, and c) earmarking of 25% of the defence R&D budget for private industry, startups, and academia
- Establishment of an indigenisation portal - Self-Reliant Initiatives through Joint Action (SRIJAN) - to facilitate indigenisation by the Indian industry including MSMEs
- Relaxation in the FDI policy by increasing the FDI cap in the sector to 74% through automatic route and up to 100% through government approval route
- Establishment of two Defence Industrial Corridors (DICs), one each in Uttar Pradesh and Tamil Nadu, to promote defence manufacturing.

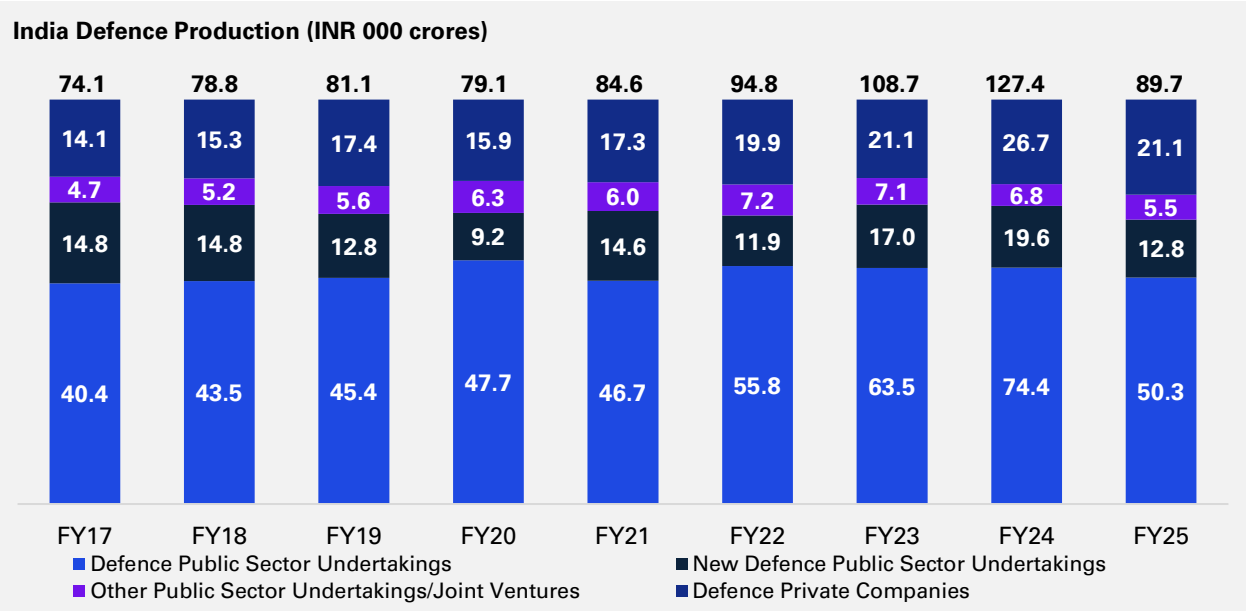
Current state

With increased government spending and focus on indigenisation, India's defence budget has been on a steady rise for the past 10 years. This increase in defence expenditure is directly linked to Government of India (GoI) initiatives with focus on modernising India's Armed Forces and self-reliance. For FY 2025-26, INR 6,81,210 crores (USD 78.8 billion) was allocated for the total defence budget.[1]

Historically, India relied heavily on foreign countries for its defence needs, with about 65-70% of defence equipment being imported.[2] During FY2024-25[1], the Ministry of Defence signed a record 193 contracts worth over INR 2,09,050 crore, of which 177 contracts (~92% of the total), were awarded to the domestic industry. Additionally, India's imports decreased by 9.3% between 2015–19 and 2020–24.[3] However, with a share of 8.3% of global imports, it remains the one of the top defence importers in the world where Russia and France are its major suppliers for large and complex equipment, systems and technologies.[3]

Indian defence manufacturing ecosystem is currently dominated by the 16 Defence Public Sector undertakings (DPSUs), accounting for 70.2% of all defence production (FY 2024-25)[4]. This is complemented by a growing private sector participation, and a strong MSME vendor base, together making up a share of ~ 24% (FY 2024-25)[4]. DPSUs, along with Defence R&D Organisation (DRDO) have led efforts to indigenise defence technology. Projects such as the Light Combat Aircraft (LCA) Tejas, the Akash Surface-to-Air Missile (SAM) system, and the Arihant-class nuclear submarines exemplify growing indigenous capabilities.

Figure 2: India Defence Production (INR 000 Crores)[4]



Over the period of FY2017 to FY2022, the contribution of private players has increased by about 41% owing to government initiatives. As on 31 Dec 2024, the defence production has reached INR 89,702 crores (USD 10.5 billion) against the set target of INR 1,60,000 crore (USD 19.02 billion)[4] for FY2024-25 with overall aspirations to achieve INR 03 lakh crore in defence production by 2029. At the same time, dependence on imports still exists for certain equipment and systems.

1 Make in India Powers Defence Growth, Ministry of Defence Press Release, 29 March 2025
2 Marching Towards Atmanirbharta: India's Defence Revolution, Ministry of Defence Press Release, 29 October 2024
3 Stockholm International Peace Research Institute (SIPRI) database
4 Department of Defence Production (DDP) Dashboard

Gaps to be addressed

Despite these achievements, India's self-reliance in defence procurement remains relatively low and several gaps need to be addressed to enhance self-reliance in defence capabilities:

1. **Technological dependencies:** Critical technologies, such as advanced avionics, propulsion systems for land, marine & aerial platforms, and critical missile sub-systems, are still largely sourced from foreign vendors. This dependency makes India vulnerable to external pressures and supply chain disruptions.
2. **R&D lag:** Although India has been investing in defence R&D, with expenditure rising from INR 14,358 crores (USD 1.69 billion) in FY 2015-16 (4.64% of the total defence budget) to INR 26,817 crores (USD 3.16 billion) in FY 2025-26 (3.93% of the total defence budget), the outcomes have not always matched the requirements and expectations.[1] The gap between R&D efforts and their translation into deployable defence technology remains significant. In addition, expenditure on defence R&D has remained abysmal in terms of percent of total defence spend, in comparison to leading nations which spend 10-15% of their defence expenditures on R&D.[2]
3. **Industrial base limitations:** The Indian defence industrial base, primarily dominated by DPSUs, lacks the agility and innovation that private sector participation can bring. The ecosystem for defence startups and Micro, Small, and Medium Enterprises (MSMEs) is still emerging and requires substantial support and nurturing.
4. **Skill deficit:** The production of advanced defence systems necessitates a highly skilled workforce capable of managing sophisticated technologies. India faces a deficit in specialised skill sets required for the design, development, and maintenance of cutting-edge defence technologies.
5. **Infrastructure and testing facilities:** The existing infrastructure, including testing and certification facilities, is often inadequate to support the rapid prototyping and mass production of advanced defence systems. Modernisation and expansion of these facilities are crucial for self-reliance.
6. **Regulatory hurdles:** Complex regulatory frameworks and red tape can stifle innovation and delay project timelines. Streamlining regulatory processes and creating a more conducive environment for defence manufacturing are essential steps.
7. **Tax Incentives:** India's success with concessional manufacturing tax rates and Production Linked Incentives (PLI) Schemes suggests it's time to expand PLI to defence and introduce several tax incentives for defence manufacturers.
8. **Indigenous Content (IC) related challenges** can be included in regulatory challenges, as well. The extant definition of IC in DAP 2020 emphasizes manufacturing but provides limited quantifiable incentives to OEMs for crucial services like engineering support, after sales support and skill development; lack of such incentives deters OEMs from contributing to India's defence manufacturing ecosystem, hindering its growth.

By promoting indigenisation, India will strengthen its industrial base, boost innovation, create job opportunities, and enhance its technological prowess. Achieving enhanced self-reliance in defence capabilities by 2032 is a visionary yet practical goal for India. By addressing existing gaps, India can build a resilient, innovative, and self-sufficient defence manufacturing ecosystem that not only meets its security needs but also contributes significantly to global defence and security.

1 A record over Rs 6.81 lakh crore allocated in Union Budget 2025-26 for MoD, an increase of 9.53% from current Financial Year, Ministry of Defence Press Release, 1 February 2025
2 KPMG analysis

1.2 Become a major exporter by 2032

The global defence market is both highly competitive and lucrative, presenting abundant opportunities for nations that can offer cutting-edge, reliable, and cost-effective defence equipment. As geopolitical tensions fluctuate and the demand for advanced defence technology increases exponentially, countries around the world seek dependable suppliers to meet their defence needs. For India, transitioning from one of the largest importers of defence equipment to a leading exporter represents not only an economic opportunity but is also a strategic imperative. A significant aspect of the vision 2047 is turning India into a global defence export leader by 2038. By aiming to position India among the top five global exporters of high-quality defence equipment and technology, the country seeks to enhance its strategic influence and economic prosperity. This ambition necessitates expanding international partnerships, adhering to global standards, and actively promoting Indian defence products in international markets.

Current state

India's defence industry has made notable strides in recent years. According to the data published by the GoI, India's defence exports have shown a remarkable increase, growing from around INR 686 crores (USD 81 million) in 2013-14 to approximately INR 23,622 crores (USD 2.76 billion) in 2023-24, which was an y-o-y rise of 32.5%[1]. The upward trajectory of ~30x increase in a decade is driven by policy measures and concerted efforts from key stakeholders. The GoI has set a target of achieving defence exports of INR 50,000 crores (USD 5.88 billion)[1] by 2029. The MoD has also formed an Export Promotion cell to promote defence exports and facilitating private and public sector companies for export promotion. Indian industry is currently exporting defence products to more than 100 nations[1], wherein the private sector and DPSUs contributing 60% and 40% respectively. The top three destinations for India's defence exports in 2023-24 were the U.S., France, and Armenia.[2]

Despite the progress, India's share of the global defence export market remains modest. India ranked 28th (with a share of 0.2% of the global trade) among global arms exporters in the period of 2020-24, well below the top five countries—U.S. (43%), France (9.6%), Russia (7.8%), China (5.9%), and Germany (5.6%)[3] .The goal of emerging as a top five exporter by 2038 requires addressing several existing gaps and implementing strategic measures to scale up export volumes and market reach.

1 Department of Defence Production (DDP) Dashboard
2 Atmanirbhar Bharat in Defence, Ministry of Defence
3 Stockholm International Peace Research Institute (SIPRI) database

Gaps to be addressed

1. **Technological competitiveness:** While India has developed various defence products indigenously, not all are competitive on the international stage. Advanced technologies such as fifth-generation fighter jets, long-range precision-guided munitions, and state-of-the-art Electronic Warfare (EW) systems mainly driven by gaps in material technology and electronic & sensor component technologies are areas where India currently lags behind leading exporters
2. **Quality compliance:** Meeting international quality and certification standards remains a challenge and is an area where Indian products need to consistently excel. Global markets demand stringent compliance with standards like NATO STANAGs, US MIL-STD, and the European Defence Agency's guidelines
3. **Brand recognition and trust:** Indian defence products have yet to build a robust brand recognition and trust in international markets. Establishing a reputation for reliability, durability, and after-sales support is critical for long-term success in defence exports
4. **Defence diplomacy:** Effective utilisation of defence diplomacy to secure deals and partnerships has not been fully achieved. Leveraging diplomatic ties to open new markets and secure government-to-government contracts is a crucial area for growth
5. **Infrastructure and production capacity:** Scaling production to meet international demand requires substantial infrastructure investment and enhanced production capacity. Current manufacturing capabilities need to be expanded and modernised
6. **R&D and innovation:** Continuous investment in R&D is essential for creating cutting-edge defence technologies that cater to future battlefield requirements. The linkage between defence R&D and industry needs to be strengthened.

In pursuit of becoming a top global defence exporter by 2038, India must address technological gaps, ensure international quality compliance, build a strong global brand, and strategically leverage defence diplomacy. Building on the steady growth in defence exports and the supportive policy environment, India has the potential to emerge as a formidable player in the international defence market. In order to bridge the highlighted gaps, the country needs to boosting R&D and scaling production infrastructure to enhancing marketing and international partnerships, will be crucial.

1.3. Achieve global leadership in critical niche technologies by 2045

India stands at a crucial juncture in its journey towards becoming a globally recognised defence power. Over the past two decades, India has made steady progress in indigenisation of defence manufacturing, supported by sustained policy initiatives, and increasing private sector involvement. However, technological superiority is a key differentiator that can decisively influence national security, strategic dominance, and international standing. With the rapid pace of technological advancements, the race to develop and deploy cutting-edge defence technologies has never been more intense. India, with its growing economy, strategic geographical location, and expanding defence capabilities, is well-positioned to aspire for global leadership in critical niche technologies by 2045.

Achieving global leadership in critical niche technologies necessitates a robust ecosystem that fosters collaboration between industry, academia, and government, and directs substantial investments into futuristic R&D. Technologies such as Artificial Intelligence (AI), autonomous systems, quantum computing, hypersonic, advanced materials, and cyber defence stand as the future pillars of military capability. India's ambition to lead in these areas requires a comprehensive strategy that leverages its intellectual capital, industrial base, and policy framework.

Current state

India has made commendable progress in developing indigenous defence technologies over the past decades. Research institutions, academia and DPSUs are enablers in driving innovation. Key milestones include the development of the Light Combat Aircraft (LCA) Tejas, BrahMos supersonic cruise missile—and Agni series of ballistic missiles. Additionally, advancements in radar systems, electronic warfare, and communication systems have strengthened India's defence capabilities.

However, the landscape of critical niche technologies requires a forward-looking approach. India ranks 39th on the Global Innovation Index[1] up from 81st in 2015 which indicates strong innovation potential. India excels in key indicators like ICT services exports, venture capital received, and intangible asset intensity. Despite this, the development and deployment of technologies such as AI in military applications, hypersonic weaponry, and quantum technologies remain in nascent stages.

1 Global Innovation Index 2024

Gaps to be addressed

To achieve global leadership in critical niche technologies by 2045, several gaps need to be addressed:

1. **Inadequate R&D investment:** India's current investment in defence R&D is insufficient to compete with global leaders. Enhanced funding and efficient allocation of resources are needed to drive innovation. Moreover, private sector's role in high-value R&D-intensive segments and technology development remains marginal.
2. **Limited long-term perspective:** Focus on current initiatives / policies is on equipment / platform-level indigenisation instead of on achieving global leadership in futuristic defence technologies. While this is a fair strategy to leapfrog the development cycle, a longer term strategy with emphasis on elemental technology development needs to be put in place.
3. **Lack of adequate funding:** While iDEX and TDF initiatives support early-stage defence start-ups to an extent, they have limited ability to transition from prototypes to large-scale production.
4. **Fragmented ecosystem:** The collaboration between industry, academia, and government is vital for technological advancements, presently this ecosystem lacks cohesion and needs to be more integrated.
5. **Talent retention and skill development:** While India produces a large number of engineers and scientists, retaining talent in defence research and ensuring a continuous skill upgrade is a challenge. This has resulted in a shortage of specialised expertise in critical technology areas e.g., microelectronics, advanced materials, aero-engines, semiconductors.
6. **Infrastructure and testing facilities:** The existing infrastructure for R&D, including testing and certification facilities, needs modernisation and expansion to support cutting-edge research.
7. **Policy and regulatory hurdles:** Complex regulatory frameworks can hinder innovation and delay the implementation of new technologies. Streamlined policies are needed to facilitate swift decision-making and adaptable project management. Application of GFR framework to awarding development contracts and R&D grants is a killer to fueling and funding R&D growth.
8. **Global collaboration:** While focusing on indigenous development, strategic international collaborations can accelerate the acquisition of advanced technologies and best practices, which have yielded limited results for India as of date. Many collaborations were through technology transfers only, which are often limited to assembly and manufacturing without full access to source codes, critical IP, or design autonomy. A shift from a ToT & licensing model of collaboration to a co-development model of engagement will be a key game changer in leveraging global collaborations for national growth.
9. **Achieving leadership in non-kinetic warfare:** The contours of combat engagements are changing from kinetic to non-kinetic warfare and an approach which uses high-tech low cost assets that can disrupt and destroy complex high cost assets. Bringing in military and technology experts and think tanks to define these doctrines and harnessing the innovation ecosystem to build solutions for these doctrines by incorporating enabling technologies like AI, data analytics, quantum computing, cyber security will enable us take a leading position in this domain.

By strategically increasing R&D investments, fostering a cohesive innovation ecosystem, developing and retaining talent, modernising infrastructure, streamlining policies, and forming strategic global collaborations, India can ascend to a position of technological superiority in the defence manufacturing sector. These recommendations, substantiated by increased funding, global best practices, and a commitment to innovation, can assist India not only achieve its vision but also contribute significantly to global defence and security. By implementing these strategic initiatives effectively, India can realise its aspirations, securing its place as a leading global player in critical defence technologies.

C.

Recommendations for capability development

With strategic vectors outlined to enhance self-reliance, achieve global leadership in technology, and become a major exporter, the path to this vision is challenging yet achievable. To bridge the current gaps and address the barriers identified, specific recommendations, as mentioned hereunder, across various capability dimensions are crucial. These recommendations are aimed at ensuring the successful realisation of India's defence ambitions and should be the focus areas for developing nation's capabilities to realise the vision 2047. It also requires phased implementation of strategic recommendations over three distinct periods:

- **Short term (2025-2032):** Laying the foundation
- **Medium term (2032-2038):** Scaling and solidifying progress
- **Long term (2038-2045):** Achieving technological and strategic dominance.

This phased approach ensures a structured and sustainable progression towards becoming a global defence leader.

1.1 R&D and innovation

Recommendations

A robust investment in R&D is the cornerstone of innovation and technological advancement for which the following interventions are recommended:

1. **Boost defence R&D investment:** Increasing investment in defence R&D by allocating a higher percentage of the defence budget towards R&D activities and reducing the gap between research initiatives vis-a-vis their implementation can significantly enhance indigenous capabilities. India should aim to increase its defence R&D budget to at least 10% of the total defence expenditure by 2032. This brings us closer to the trend in leading countries like the U.S. and China, which allocate substantial budgets to R&D. In addition, the industry should increase its average R&D spend to about 3% of their revenues from current levels of about 1%. This enhancement can be substantially incentivized by suitable tax breaks, capital subsidies and research grants from deep tech R&D allocations by the Government. It is pertinent to note that French industry invests up to 10% of their revenues.[1]

- **In 2024, the U.S. Department of Defense (DoD) allocated approximately USD 145 billion to research, development, testing, and evaluation (RDT&E), constituting 15% of the total defence budget.**
- **Programs such as the Defense Advanced Research Projects Agency (DARPA) focus on high-risk, high-reward research projects that have led to significant technological advancements.**
- **The U.S. military's emphasis on innovation has resulted in the development of technologies like stealth aircraft, precision-guided munitions, and advanced cyber capabilities.**

1 KPMG analysis

2. **Focus on critical technologies:** Identifying and focusing on the acquisition and development of critical technologies within the country is imperative. Collaborations with academia, research institutions, and private sector players can drive innovation and indigenous development of advanced technologies. India should establish dedicated funds for these futuristic technologies to drive breakthrough innovations Some examples of technology areas could be the following, which may be pursued to achieve the vector goals:
   - Leapfrog into disruptive and transformational technology domains like 6G-enabled and AI-driven battlefield networks, real-time threat assessment, quantum computing, hypersonics, advanced materials, space defence and cyber defence, etc.
   - Fully integrated Multi-Domain Warfare (MDW) solutions, combining land, air, sea, space, and cyber capabilities through seamless AI-driven Command and Control (C2) platforms which will include AI-coordinated autonomous battle groups.

- **Israel's defence industry is known for its strong public-private partnerships.**
- **Companies work closely with the Israel Defense Forces (IDF) and the Ministry of Defence**
- **This collaboration has led to the development of cutting-edge technologies such as the Iron Dome missile defence system.**

3. **Public-private synergies:** Fostering synergies between DRDO, DPSUs and private sector companies, including startups and MSMEs, can create a more dynamic and competitive defence ecosystem.
4. **Promoting indigenous R&D and innovation:**
   - Encouraging home-grown research and development through incentives, grants, and partnerships with academic institutions can foster innovation .
   - Expanding the existing initiatives like IDEX and TDF - example providing mentorship with these programmes or giving the opportunity of real-world testing of the ideas developed with armed forces.

Establish National Defence Technology and Innovation Framework (NDTIF)

The recommendations above need an institutionalised framework to channelise the ideas and the efforts in these directions, jointly by all the stakeholders. Keeping in mind the vital vector of accomplishing global leadership in select niche defence technology, we recommend establishing and operationalising NDTIF to identify, prioritise, promote and facilitate the development of the future defence technologies. This framework will consist of three interlinked bodies:

- **Defence Technology Planning Group (DTPG):** Core working group of key stakeholders i.e., armed forces, DRDO, DPSUs, private sector, and academia, with a mandate to identify breakthrough technology areas which will be further fragmented into short term achievable milestones.
- **Defence Technology Investment and Development Council (DTIDC):** A high-powered apex body chaired at the ministerial level, responsible for promoting, managing and facilitating progress in the identification and achievement of milestones, strategic technology investments, international collaborations, and long-term capability development roadmaps.
- **Technology Centres of Excellence (COEs):** Dedicated and independent R&D and innovation facilities may be setup as not-for-profit entities. These act as collaborative platforms where industry, academia, services, and government institutions can come together to work on advanced defence technologies. The primary aim is to create an integrated ecosystem that accelerates technological advancements, promotes self-reliance, and strengthens the overall defence capabilities of the nation.

The key objectives of NDTIF would be as follows:

1. Facilitate collaboration

- Enable seamless collaboration between defence research organisations like DRDO, private sector companies, startups, and academic institutions.
- Encourage joint ventures, partnerships, and cooperative R&D projects to pool resources and expertise.

2. Stimulate innovation

- Provide an environment conducive to cutting-edge research and development.
- Encourage the development of critical and innovative defence technologies.

3. Enhance skill development

- Partner with educational institutions to offer specialised courses and training programs.
- Develop a skilled workforce capable of managing and advancing sophisticated defence technologies.

4. Accelerate technology transfer

- Facilitate the transfer of technology from lab to market, ensuring faster commercialisation and deployment of defence innovations.
- Support startups and MSMEs in transitioning prototypes into large-scale production.

5. Boost indigenous manufacturing

- Promote the development and manufacturing of indigenous defence equipment to reduce dependency on imports
- Support initiatives aligned with the vector of self-reliance.

Figure 3: NDTIF's construct

Purpose

- Identify and drive the critical science and technology innovations.
- Coordinate and provide oversight to CoEs to:
  - Conduct R&D to transform technology ideas into Proof of Concept (PoC)..
  - Undertake R&D on early-stage manufacturing and materials concepts
  - Undertake late-stage R&D to assist industry in developing a POC into a productionable prototype.
- Ensure that the developed technologies meet global standards and are ready for deployment.
- Provide companies with access to critical facilities, equipment and expertise.
- Commercialise academic research to increase their participation in R&D ecosystem by ensuring smooth transition from research to market, maximising the impact of innovations.
- Provide platform for ideas' exchange – buyer (govt), user (services), seller (industry), academia, and R&D organisations.
- Synergise fundamental and translational research carried out across Academia, Research Laboratories and Public and Private Enterprises.
- Reduce burdensome costs for R&D for small companies and other customers
- Collaborations with top universities and technical institutes to ensure cutting-edge curriculum.

Attributes

- One CoE each specialising for each technology area identified by DTPG.
- Specialised sub-verticals, like DRDO, within each COE to carry out nuanced research. E.g. a dedicated 'composite materials' wing under the facility for R&D in material technology.
- Training facility - wherein the training of the trainers can be undertaken on the newly developed/ latest technologies to create skilled manpower in respective technologies.
- Test and quality assurance labs for industry/ academia to test their prototypes.
- Dedicated offices to handle the intellectual property management, technology transfer agreements, and commercialization of innovations.
- Permanent arbitration cell to address IPR and contract management related conflicts like DARPA.
- Defence innovation hubs and incubators, which can nurture new technologies and startups by supporting high-risk, high-reward projects as well as providing mentorship, funding, resources, and market access.
- Hubs may adopt 'Fail Fast, Scale Fast' innovation approach within defence R&D, backed by sovereign funds.
- Theme based competitions in academia / industry to garner ideas as well as recognise talent.

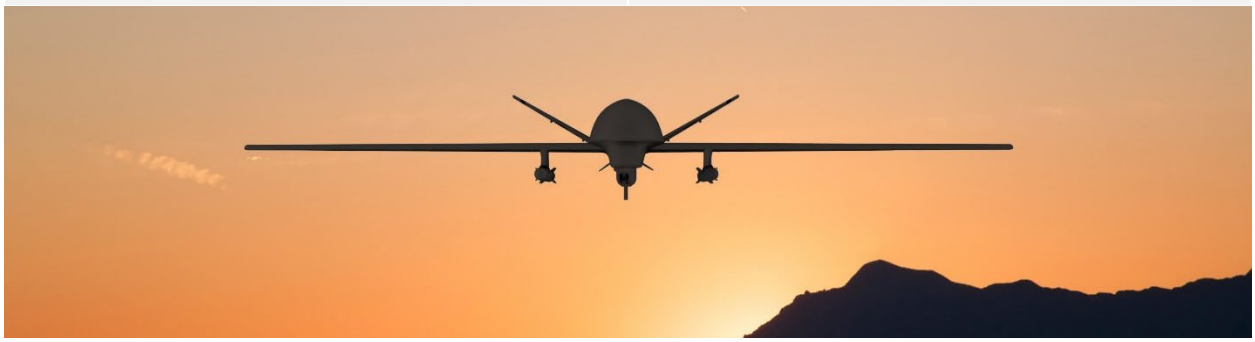


Figure 3: NDTIF's construct

Operating framework

- **Funding**
  - Initial capital to setup centres to be funded by government and industry associations. It will include long-term investment in infrastructure, expertise and skills development.
  - Collaborative projects jointly sponsored by government, industry and academia; IPRs will be jointly owned by sponsors
  - Business-funded R&D contracts - IPRs will be owned by business with exploitation rights to CoE
  - Independent projects – Funded by centres and grants. IPs owned by centres and available to business through appropriate licensing, spin out or other arrangements.
- **People –** Centres will hire best of the talented scientists, engineers and technicians.
- **Infrastructure –** State-of-the-art equipment to develop ideas at a commercial scale where existing government R&D establishments may contribute infrastructure, equipment and manpower.
- **Governance –** Board comprising members from all stakeholders who will not intervene in operations.

Benefits expected

- Encourage meaningful R&D by industry as well as academia.
- Reduce the risk of innovation and R&D.
- Reduce IPR and contract management related risks.
- Address accountability issues that have marred government defence R&D establishments.
- Accelerate the pace of business development.
- Catalyse the development of skilled manpower.
- Create sustainable jobs and growth.
- Develop the country's skills and knowledge base and its global competitiveness in technological exports.

Implementation timeline

Short Term (2025-2032)

- Increase R&D budget to 6% of total defence expenditure.
- Establish and operationalise NDTIF.
- Direct substantial funds towards critical technologies.

Medium Term (2032-2038)

- Increase R&D budget to 8-10% of total defence expenditure to meet the parliament's recommendation..
- Strengthen and expand CoEs.
- Continue funding for high-risk, high-reward projects
- Expand focus areas based on emerging technologies.

Long Term (2038-2045)

- Maintain 12-15% of total defence expenditure for R&D.
- Transform established CoEs into global leaders.
- Extend funding scope to include futuristic and emerging technologies.

1.2 Talent and skill development

Prioritising talent acquisition, retention, and continuous skill enhancement is central to achieving Vision 2047 where a skilled workforce is essential for designing, developing, and maintaining advanced defence systems. This requires concerted efforts in skill development, continuous training, competitive compensation, career growth opportunities, and the establishment of a robust education system focused on defence technology. This comprehensive approach ensures that the talent pool remains in sync with the evolving demands of the defence manufacturing industry.

There have been interventions done in the recent past to address the skill and talent gaps. For example, Skill India initiative and the establishment of defence sector-specific training institutes, such as the CoE for defence at Coimbatore, aims to bridge the skill gap and align workforce capabilities with industry needs. Institutions like IITs, National Academy of Defence Production (NADP) and the Defence Institute of Advanced Technology (DIAT) offer postgraduate defence programs. Indian National Defence University (INDU) is being set to be a premier hub for defence studies along with other institutions. The Extramural Research (ER) Scheme fosters DRDO-academia-industry collaboration, enhancing military R&D and skilled manpower.[1]

Recommendations

Despite these initiatives, there remains a substantial gap in the number of skilled professionals required to meet the sector's growing demands. The rapid pace of technological advancement necessitates a continuous development and adaptation cycle for the workforce. Several focused strategies are required to cultivate and retain such talent:

1. **Specialised education programs**
   - Collaborate with leading educational institutions to develop and offer specialised courses in defence technology, engineering, and management.
   - Foster partnerships between industry and academia to create curricula tailored to industry needs. This ensures that students acquire both theoretical knowledge and practical skills.

U.S. DoD and MIT collaborate to support programs that integrate academic research with defence applications.[2]

2. **Scholarships, fellowships, and internships:** Provide scholarships, fellowships, and internships to attract the brightest minds to the defence sector. Scholarships can help address financial barriers, fellowships can support research activities, and internships can provide hands-on experience in real-world defence projects.

Israel's Talpiot program identifies and nurtures top talent within the IDF, providing them with advanced education and training in key technological areas.

1 KPMG analysis
2 U.S Department of Defence official website

3. **Apprenticeship programs:**
    - Implement apprenticeship programs that combine theoretical education with practical training.
    - Ensure that the workforce is well-prepared for the demands of the defence industry.

- **Germany's dual education system, which combines classroom instruction with hands-on training, has been highly effective in developing a skilled workforce.**
- **In the defence sector, this approach ensures that graduates are ready to work with advanced technologies upon completion of their education.**

4. **Continuous skill development programs**
    - Implement continuous professional development programs to ensure the workforce stays updated with the latest technological advancements.
    - Regularly conduct workshops, certifications, and international training opportunities to maintain the workforce's expertise in emerging fields.
    - Collaborate with international defence training institutions to provide exposure to global best practices and advanced technologies.
5. **Attracting and retaining top talent**
    - Offer competitive compensation packages to attract and retain top talent in defence R&D. Competitive salaries ensure that the sector remains attractive to skilled professionals.
    - Provide clear career growth opportunities within the defence sector, including defined career progression pathways, opportunities for professional development, and recognition of achievements.
6. **Attracting migrated talent back to India**
    - Offer attractive roles in R&D and strategic positions within defence organisations to attract talent, back to India to leverage their experience and knowledge.
    - Provide relocation assistance, competitive salaries, housing allowances, and other benefits to make the transition appealing.
    - Establish global networks and engage with Indian professionals abroad through conferences, webinars, and formal networks.
    - Showcase India's vibrant and growing defence manufacturing sector, highlighting opportunities for impactful work and professional growth.
    - Leverage platforms such as the Pravasi Bharatiya Divas to engage with overseas Indian talent.

Implementation timeline

Short Term (2025-2032)

- Introduce specialised courses in collaboration with top-tier institutions.
- Offer scholarships, internships along with attractive compensation packages and career growth opportunities.
- Implement continuous development programs.
- Create incentives for overseas talent.

Medium Term (2032-2038)

- Expand range of specialised courses and partnerships to more institutions.
- Review and enhance compensation packages.
- Introduce advanced skill development programs.
- Refine programs for technological advances.
- Develop formal global talent networks.

Long Term (2038-2045)

- Institutionalise specialised courses across major universities.
- Integrate collaborations and R&D globally.
- Maintain continuous skill adaptation.
- Establish CoEs with returning professionals.
- Institutionalise long term growth initiatives to enhance career growth avenues.
- Implement global-standard skill development.

1.3 Developing defence production capabilities

The defence industry in India is characterised by a mix of DPSUs, private sector companies, MSMEs, and dynamic start-ups. While DPSUs and large private sector companies have presence at OEM and Tier-1 levels, majority of the industry in private sector is present in Tier-2 / 3 / 4 levels and strive to move up the value chain. To support development of domestic production capabilities, the government has introduced various initiatives and policies, including the 'Make in India' initiative, creating defence corridors, funding support, industrial incentives, testing infrastructure and so on. Despite these efforts, the industry faces significant challenges such as funding limitations, technological dependencies, prolonged procurement cycles, and the need for greater innovation and quality compliance.

Recommendations

Achieving this goal requires a multifaceted approach by addressing issues on both demand and supply sides as well as those of the ecosystem, involving robust manufacturing policies, financial support for new technologies, quality assurance, strong global branding, and a resilient supply chain ecosystem.

1. **Improving financial support and access to capital**
    - Provide increased financial support for manufacturing R&D-and for investments in materials processing and critical product development through PLI schemes and viability gap funding.
    - Leverage export credit agencies like the Export-Import Bank of India for favourable credit terms.
    - Classify defence manufacturing under priority sector lending to facilitate easy bank credit access, increasing MSME participation.
    - Encourage MSMEs and startups to participate in defence manufacturing through financial incentives, tax breaks, and access to funding.
2. **Developing a resilient supply chain**
    - Encourage local manufacturing of systems/ sub-systems/ components through 'Make in India' initiatives to bolster the supply chain.
    - Establish local suppliers for critical components / equipment to reduce dependency and ensure smooth operations.
    - Develop policies that provide long-term contracts and create stable business environments, assuring sustained opportunities for these smaller entities.
    - Provide long-term demand visibility to the industry.
    - Development of domestic capabilities in producing raw materials that are currently being imported like high-grade alloys; core chemicals and propellants, including ammonia, potassium nitrate, PETN; composites.
    - Cultivate alternate sources for specialised rare raw materials such as Titanium, Magnesium, Chromium, Molybdenum, Cobalt, Nickel, Lithium, catalysts, membranes, and essential components for batteries and fuel cells for defence applications, to reduce dependency on respective single source.

3. **Encouraging joint ventures and technology transfers**
    - Collaborative projects between public and private sectors, leveraging the strengths of both entities.
    - Implement policies that facilitate technology transfers, co-development programs and joint ventures with global defence companies to acquire advanced technologies.
    - Forming joint ventures and pursuing licensing agreements with global defence companies to manufacture under foreign technologies, filling existing capability gaps.
4. **Enhancing quality and compliance**
    - Set up dedicated quality assurance cells aimed at ensuring compliance with global standards like NATO STANAGs, US MIL-STD, and European Defence Agency guidelines, to promote exports.
    - Regular audits and certifications from reputed global bodies to enhance credibility.
    - Introduce and maintain robust quality management systems and provide continuous training for quality control personnel.
5. **Expanding export opportunities and defence diplomacy**
    - Actively pursue defence export opportunities through diplomatic and trade missions to open new markets.
    - Strengthen and scale the defence export promotion body to streamline and enhance the export efforts.
    - Engage in bilateral and multilateral discussions to open new avenues.
    - Leverage strategic partnerships and defence cooperation agreements to facilitate exports.
6. **Building a strong global brand**
    - Launch rigorous marketing campaigns and participate at scale in international defence exhibitions to promote Indian defence products.
    - Showcase success stories and technological advancements to build a reputation for reliability and excellence.
    - Build trust by providing reliable and prompt after-sales service. Establishing service centres in strategic international markets can ensure that customers receive timely support.
7. **Tax incentives**
    - It is recommended to extend the 15% concessional corporate tax rate for manufacturing entities that commence manufacturing operations beyond 31 March 2024 to boost the sector, especially defence industries, and foster self-reliance.
    - Additionally, offering a 15% tax rate to entities conducting MRO operations in their initial years would foster this emerging sector and strengthen India's industrial base.
    - Implementing time-limited tax holiday periods could further incentivise defence manufacturing.
    - Weighted deductions of 200% for R&D expenditure, particularly towards the defence sector.
    - To make India a global MRO hub, the government could apply a 0% GST rate on both inputs and outputs for civil and defence aviation. If Nil GST is unachievable, defence MRO should align with civil MRO by extending the 5% GST exemption on imported parts to defence MRO. Additionally, the 5% GST exemption for civil MRO parts should also apply to domestic procurements.

Implementation timeline

Short Term (2025-2032)

- Provide financial incentives and tax breaks for MSMEs and startups.
- Develop and establish long-term contracts and stable policies.
- Set up dedicated quality assurance cells.
- Introduce robust quality management systems and continuous training.
- Launch global marketing campaigns.
- Promote success stories and advancements.
- Establish service centres in strategic international markets.

Medium Term (2032-2038)

- Scale up support for MSMEs and startups.
- Evaluate and adjust long-term contracts and policies.
- Consolidate and expand the operations of quality assurance cells.
- Maintain and improve quality management systems.
- Scale up global marketing efforts.
- Strengthen global aftersales support infrastructure.

Long Term (2038-2045)

- Ensure significant role for MSMEs and startups.
- Review and adapt contracts and policies.
- Lead in global quality assurance standards and practices.
- Set global benchmarks for quality management.
- Establish India as a preferred supplier.
- Ensure success stories are widely recognised internationally.
- Set benchmarks for aftersales service.

1.4 Regulatory and procedural reforms

An essential component is reforming and streamlining the regulatory and procurement processes. Simplified regulations are vital to fostering innovation, encouraging investment, and ensuring efficient project management. Currently, the Indian defence industry faces several regulatory and procedural challenges that hinder its growth and the realisation of its full potential. The year of 2025 has been declared as year of reforms, and it has been suggested that the acquisition procedures need to be made simpler and time-sensitive to facilitate swifter and robust capability development. While there have been many initiatives taken by the government towards Ease-of-Doing-Business (EoDB) in the sector, the challenges remain. Select issues are highlighted hereunder:

1. **Issues with defence procurement process**
    - Lengthy procurement process leads to uncertainty in the mind of suppliers.
    - Procedural delays in terms of conversion of a requirement from Acceptance of Necessity (AoN) to Request for Proposal (RFP) stage to final selection of the vendor.
    - Cancellation of tenders adversely affects industry's business plans and discourages investments.
    - Limited option for single proprietary tenders, which denies the opportunity to purchase niche products and systems.
    - Concept of L1 (lowest bidder) is a hurdle in developing a high-quality supply chain. Though, option of enhanced parameters focuses on acquiring better equipment at-appropriate cost can be addressed through of Quality-cum-Cost Based Selection (QCBS) process.
    - Review / elimination of GFR guidelines for Defence R&D procurement & contracting.
2. **Non-level playing field for public and private sector industry**
    - The defence procurement process still inherently favours the public sector where orders are placed to DPSUs on a nomination basis thereby limiting opportunities for private players.
    - DPSUs are constrained with the operational inefficiencies arising out of the mandated government procedures in governance, procurement and human resource management, which reduces their competitiveness in global market.
3. **Procedural inefficiencies in licensing and approvals**
    - Application process for issuing of industrial licence has a long turnaround time and is not completely transparent.
    - Procedural delays in exports result in uncertain timelines for the industry.
4. **Intellectual Property (IP) and legal issues**
    - Gap in the existing IP enforcement policies and onward transfer of IP.
    - Existing judicial procedures and resolution timelines present a risk for foreign OEMs operating in our country.
5. **Challenges related to Indigenous Content (IC)**
    - Lack of incentives for OEMs for enhanced IC & IP / Design ownership and also for those involved in provision of services such as design support, skill development etc.
    - Lack of multipliers for domestic sourcing from MSMEs (which will in turn result in employment generation).
    - Absence of strategic multipliers for domestic sourcing/ investment in defence industrial corridor.

Recommendations

1. **Simplified regulatory framework**
   - Develop a transparent, flexible regulatory framework that fast-tracks the approval of programs – procurement as well as R&D projects
   - Implement a single window clearance system to significantly reduce bureaucratic delays and facilitate quicker project approvals.

- **The UK's Defence Science and Technology Laboratory (DSTL) streamlines regulatory processes to quickly bring new technologies from concept to deployment.**
- **The UK has also established the Defence and Security Accelerator (DASA) to find and fund exploitable innovations for UK defence and security.**

2. **Adaptive policymaking**
   - Adopt an adaptive policy-making approach that evolves with technological advancements
   - Continuously update policies to adapt to changing global and technological landscapes, ensuring India's defence sector remains competitive and relevant
   - Regularly review and reform defence offset policies to attract more investment and expertise.
3. **Streamlined procurement process**
   - Regular updates to the Defence Acquisition Procedure (DAP) and Defence Procurement Manual (DPM) ensure policies remain relevant and conducive
   - Streamline the procurement process by fixing strict and shorter timelines for converting requirements from the AoN stage to issuing the Request for Proposal (RFP) and final vendor selection
   - Timelines for procurement milestones should be strictly enforced to shorten the process and minimise cost overruns
   - Accountability should be fixed for exceptional delays as this would encourage the industry to invest without risking their investments to procurement delays
   - Shift from the L1-based selection to QCBS methodology to procure high-quality products with an overall lower lifecycle cost.
4. **Industry friendly reforms**
   - Public sector and private sector players should be given a level playing field and should be sensitive only to Indian vs foreign manufacturing
   - Focus should be on the quality of products rather than just the lowest bid and/or ease of nominations
   - Strengthen DPSUs and break procedural shackles to make them globally competitive
   - Procedural delays in licensing and exports should be minimised by making the processes more transparent.

5. **Intellectual property protection:** Ensure strong IP protection laws and their enforcement to safeguard innovations while encouraging open innovation and technology transfers. This will motivate innovators to develop new technologies with confidence that their intellectual property will be protected.
6. **Improve the teeth-to-tail ratio:** Endeavour should be to optimise the allocation of defence resources to ensure that a larger proportion of the budget is directed towards combat and operational capabilities ('teeth') rather than administrative and support functions ('tail'). This can be achieved by digital transformation initiatives, streamlining logistics, and adopting modern management practices which will ensure that resources are spent directly on enhancing frontline combat readiness, upgrading technology, and acquiring advanced weaponry, leading to an agile force capable of addressing security challenges.
7. **Indigenous Design & Content:** Clarity in definition and levels of indigenous design and indigenous content – i.e. distinguishing IP ownership, design ownership, software development, manufacturing and value added services. Widening the base of IC calculation as per Indian defence policy framework: GoI should consider broadening/ widening the definition of IC to include all activities that form part of manufacturing ecosystem for any country (such as engineering support, design support, after market support, skill development and trainings, new technology insertion & development etc.) as due consideration should be given for any additional efforts of vendor(s) towards development of the Indian Indigenous A&D Industry, not limited by scope or period of performance of any specific contract. A multiplier system wherein a multiplier benefit could be provided for equipment, sub-systems, or services domestically sourced/procured from MSMEs and or domestic sourcing within Defence Industrial Corridors (DIC) and investment in DICs for the purpose of computation of IC. This will create a robust ecosystem for local MSMEs, encouraging indigenization, as it would encourage the OEMs to tap into local capabilities, a step forward towards achieving 'Atmanirbhar Bharat' vision.

Implementation timeline

Short Term (2025-2032)

- Develop and implement the single-window clearance system.
- Strengthen IP protection laws.
- Shift to QCBS methodology in procurement.
- Streamline licensing and export procedures for timely processing.
- Launch initiatives to improve teeth-to-tail ratio.

Medium Term (2032-2038)

- Continuously refine and update regulatory frameworks.
- Expand IP protection frameworks.
- Strengthen DPSUs and break procedural shackles to make them globally competitive.
- Continue efforts towards improving teeth-to-tail ratio.

Long Term (2038-2045)

- Maintain nimble regulatory frameworks, staying vigilant in IP protection.
- Implement a proactive, adaptive policymaking approach to keep pace with technological advancements.
- Ensure a significant role for both public and private sectors, creating a competitive and innovative defence industry.

1.5 Strategic partnerships and collaborations

Leveraging international as well as domestic collaborations for technology transfers, joint ventures, and co-development projects can accelerate capability building and provide access to cutting-edge technologies and best practices. By combining indigenous development with strategic global collaborations, India can enhance its defence industry, foster innovation, and achieve technological superiority.

Recommendations

India has already strengthened its defence ties with various nations through bilateral agreements and collaborations in missile systems, naval projects, and aerospace technology. The GoI has also rolled out schemes to encourage collaboration among DRDO, DPSUs and private sector also there is scope for further initiatives that may be taken.

1. **Enhance strategic partnerships and technology agreements:** Strengthen and expand strategic partnerships with technologically advanced countries like the U.S., Israel, Japan, and European nations.
    - Focus on technology agreements that include co-development programs and technology transfers, providing access to advanced technologies.
    - Actively participate in global research initiatives and defence technology forums to stay informed about emerging trends, best practices, and global standards.

- **U.S. and Israel have a strong strategic partnership in defence, characterised by joint research initiatives, technology transfer agreements, and co-development projects.**
- **This collaboration has resulted in advanced technologies like the David's Sling missile defence system, exemplifying the benefits of strategic partnerships.**

2. **Enhance ToT processes:**
    - Accelerate ToT mechanisms between DRDO and the private industry for faster commercialisation of innovations.
    - Develop streamlined processes and clear guidelines for technology transfers to reduce delays and enhance efficiency.
    - Facilitate and incentivise co-development models with joint IP and licensing rights
3. **Collaborative ventures and licensing:**
    - Form joint ventures and pursue licensing agreements with global defence companies to acquire and adapt advanced technologies.
    - Use these collaborations to fill existing capability gaps and enhance product offerings in critical areas.
    - Develop policies that incentivise private sector participation in international collaborations and joint ventures.
    - Provide financial and regulatory support to private companies engaging in international R&D projects.

Implementation timeline

Short Term (2025-2032)

- Establish strategic partnerships and technology agreements.
- Actively engage in global research initiatives.
- Maintain balanced approach between indigenous development and global collaborations.
- Accelerate ToT mechanisms between DRDO and private sector.

Medium Term (2032-2038)

- Deepen existing partnerships and establish new ones.
- Increase participation in global research initiatives.
- Continue balancing indigenous and global efforts.

Long Term (2038-2045)

- Partner with foremost global leaders.
- Lead in global defence research initiatives.
- Maintain status as technology creator and adopter.

1.6 Infrastructure

The modernisation of defence infrastructure, encompassing cybersecurity, IT integration, testing facilities, and production capabilities forms the foundation bed for achieving the vision 2047. By investing in cutting-edge infrastructure, India can enhance its operational capabilities, streamline production, and achieve technological superiority in the defence sector.

Recommendations

Initiatives such as establishment of Defence Industrial Corridors (DICs), setting up 12 labs under Defence Testing Infrastructure Scheme (DTIS) and allowing DRDO and DPSU labs to be used by the private sector are already significant steps in this direction. However, there is more that can be done to strengthen the defence industrial infrastructure in the country:

1. **World-class testing and simulation facilities**
    - Invest and expand the world-class testing, simulation, and certification facilities for emerging technologies, both in numbers and capabilities. Upgrade existing laboratories and create new ones to ensure researchers have the necessary tools.
    - As mentioned earlier establish COEs that will provide adequate infrastructure to foster innovation and development.
2. **Fully operationalise existing DICs**
    - Expand and modernise DICs in Uttar Pradesh and Tamil Nadu to support high-end manufacturing and R&D capabilities.
    - Ensure these corridors provide the necessary infrastructure support to promote cutting-edge research and development.
    - Attract large industries as anchor units in the corridors that will further create a supplier ecosystem around them.
3. **Adopt advanced manufacturing technologies**
    - Integrate advanced manufacturing technologies, such as additive manufacturing (3D printing), to enhance production efficiency and capability.
    - Regularly upgrade facilities to ensure competitiveness and lead in setting benchmarks for state-of-the-art manufacturing technologies.
4. **Enhanced cybersecurity measures**
    - Prioritise the protection of critical infrastructure by integrating advanced cybersecurity measures into defence strategies.
    - Adopt state-of-the-art IT solutions to enhance operational capabilities in the digital battlefield.

Implementation timeline

Short Term (2025-2032)

- Invest in and establish world-class testing and simulation facilities.
- Operationalise and expand DICs.
- Introduce advanced manufacturing technologies.

Medium Term (2032-2038)

- Upgrade and expand existing facilities.
- Continue development and modernisation efforts in DICs.
- Further integrate cutting-edge manufacturing technologies.

Long Term (2038-2045)

- Regularly upgrade facilities.
- Ensure globally competitive DICs.
- Lead in adopting and setting benchmarks for state-of-the-art technologies.

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, with around 9,000 members from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 365,000 enterprises from 294 national and regional sectoral industry bodies.

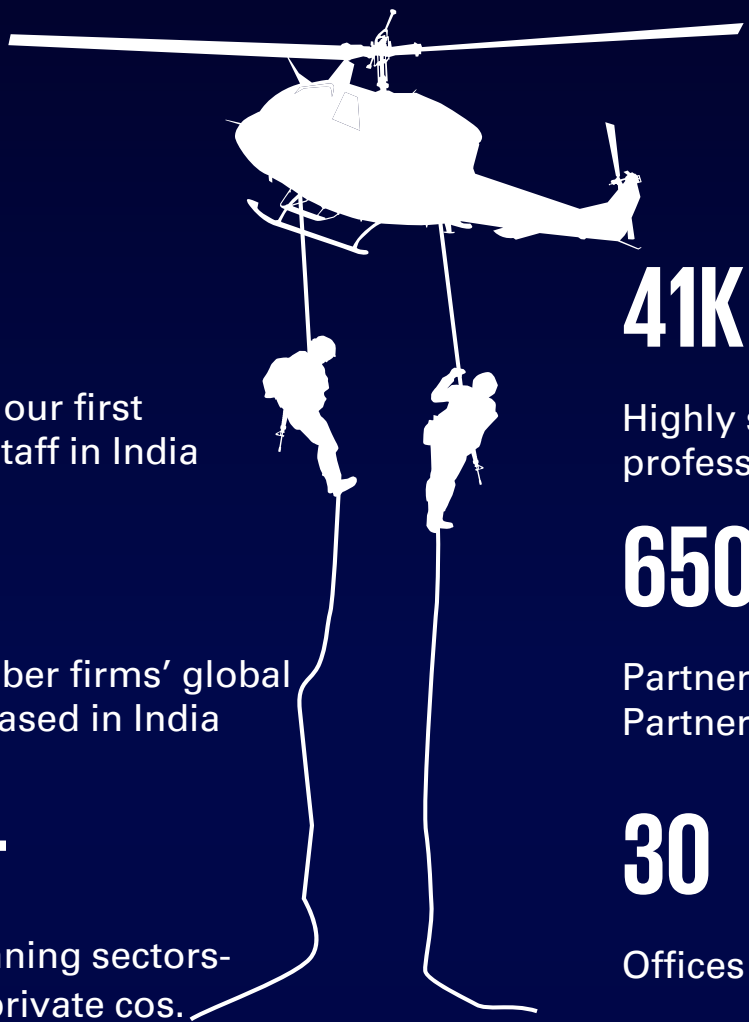
For more than 125 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness, and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Through its dedicated Centres of Excellence and Industry competitiveness initiatives, promotion of innovation and technology adoption, and partnerships for sustainability, CII plays a transformative part in shaping the future of the nation. Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes across diverse domains including affirmative action, livelihoods, diversity management, skill development, empowerment of women, and sustainable development, to name a few.

For 2024-25, CII has identified "Globally Competitive India: Partnerships for Sustainable and Inclusive Growth" as its Theme, prioritizing 5 key pillars. During the year, it would align its initiatives and activities to facilitate strategic actions for driving India's global competitiveness and growth through a robust and resilient Indian industry.

With 70 offices, including 12 Centres of Excellence, in India, and 8 overseas offices in Australia, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with about 300 counterpart organizations in almost 100 countries, CII serves as a reference point for Indian industry and the international business community.

About KPMG in India



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#1

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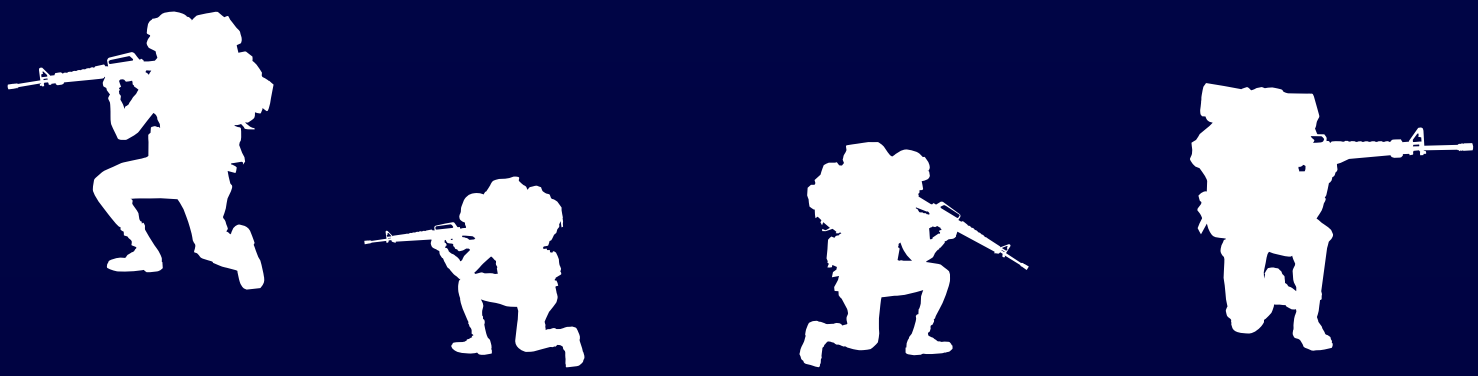
25+

Strategic Alliances**



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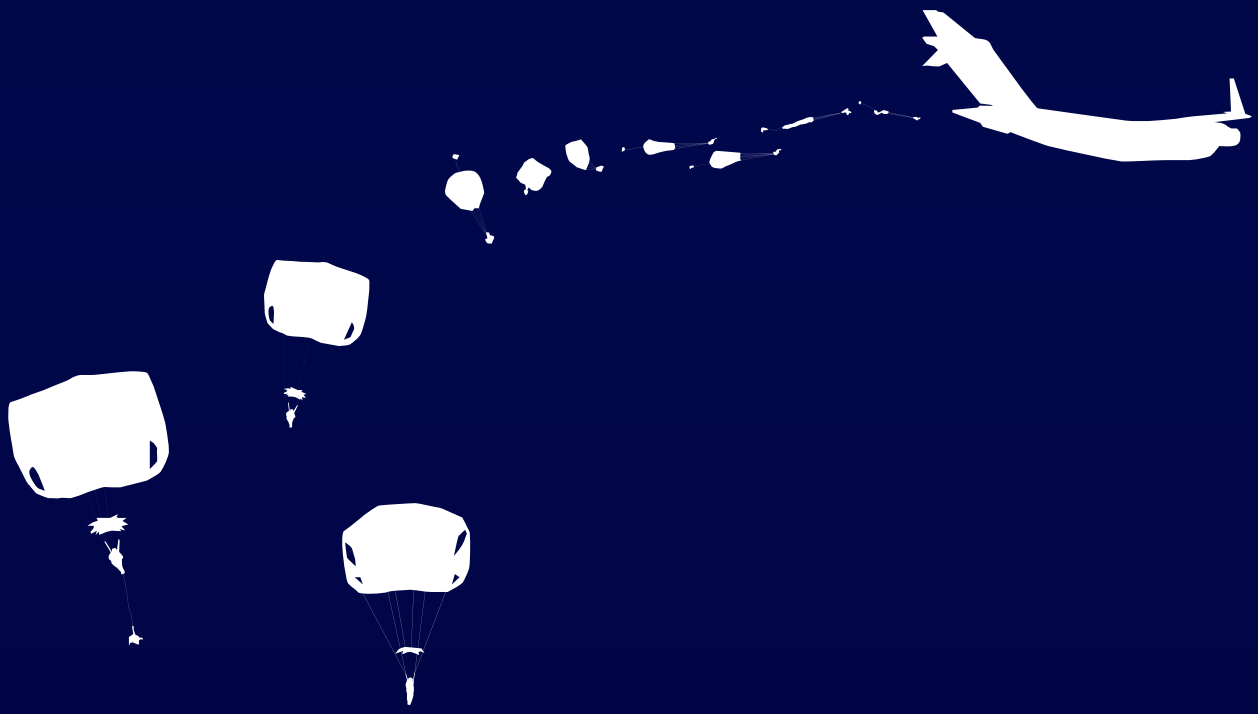

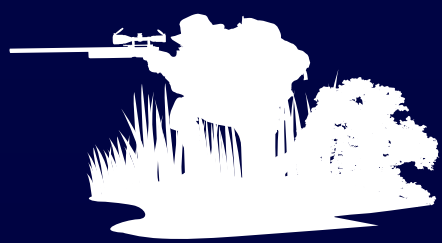

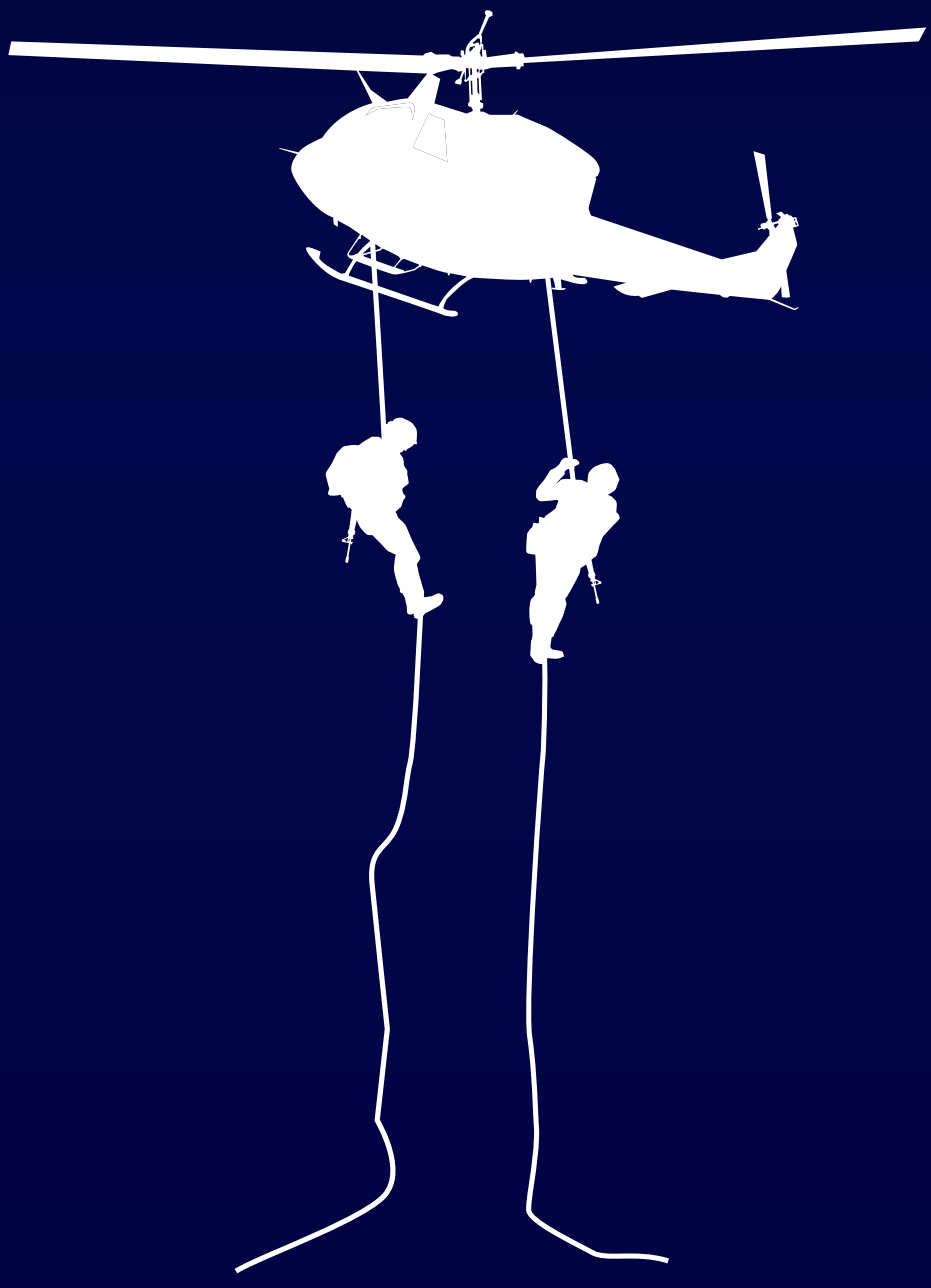

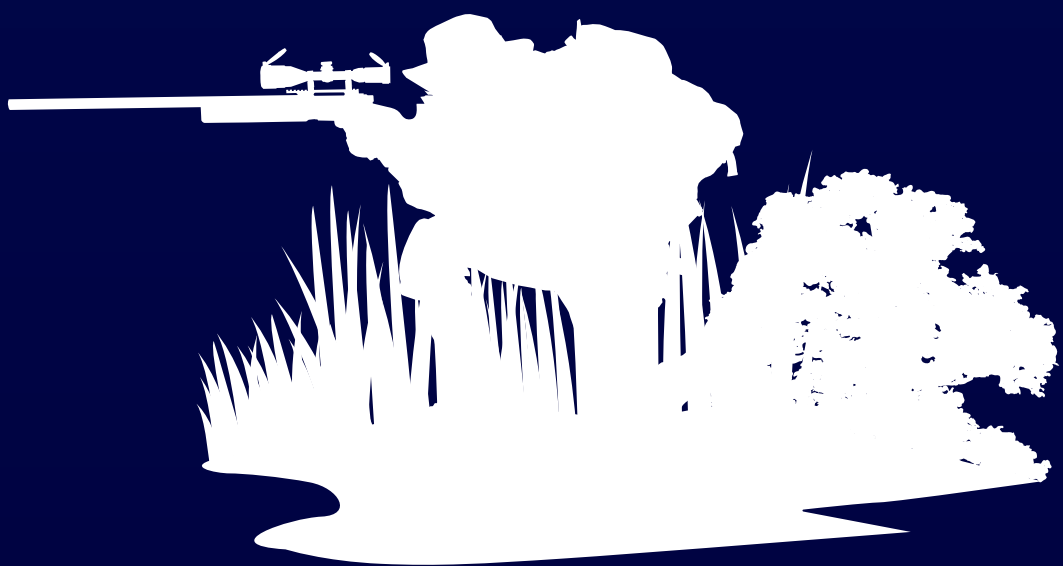

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