

AEROSPACE AND DEFENCE MANUFACTURING

**Advancing India's Leadership
in Global Market**



August 2026





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The Associated Chambers of Commerce and Industry of India

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Foreword



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India stands at a defining moment in its journey towards becoming a global aerospace and defence manufacturing powerhouse. As the nation advances towards Viksit Bharat 2047, the sector is emerging as a critical pillar of national security, technological advancement, industrial growth, and strategic autonomy.

Over the past decade, India has made significant progress in strengthening indigenous defence production, encouraging private-sector participation, expanding defence exports, and building a growing ecosystem of start-ups and MSMEs. The vision of Atmanirbhar Bharat has further reinforced the need for critical technologies, resilient supply chains, and strong domestic manufacturing capabilities.

The aerospace and defence landscape is rapidly evolving, driven by artificial intelligence, autonomous systems, unmanned platforms, advanced materials, semiconductors, cyber capabilities, space technologies, electronic warfare, and next-generation propulsion. India's ability to develop, integrate, manufacture, and scale these technologies will increasingly shape its strategic competitiveness.

India's ambition must now extend beyond meeting domestic requirements to becoming a trusted global partner – moving from “Make in India” to “Make for the World.” Achieving this will require globally competitive standards, stronger R&D and certification capabilities, skilled talent, technology partnerships, and deeper integration of Indian MSMEs and start-ups into global value chains. This transformation demands collaboration among OEMs, Tier-1 and Tier-2 suppliers, MSMEs, start-ups, academia, research institutions, investors, policymakers, and the Armed Forces.

We believe India's next phase of aerospace and defence growth will be driven by strategic collaboration, indigenous innovation, informed decision-making, and stronger industry linkages. This publication brings together perspectives on emerging technologies, industrial capabilities, supply-chain development, market opportunities, and the strategic priorities shaping India's global position.

As India moves towards Viksit Bharat 2047, a resilient, innovative, technologically advanced, and globally competitive aerospace and defence manufacturing sector will be fundamental to both national security and economic prosperity.

I hope the report will be useful to policy makers and stake holders, while preparing any future plans towards making India a Global hub of Defence Manufacturing.

Shanti Kuber



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Introduction

From Import Dependence to a Global Defence Manufacturing Power

“To succeed in your mission, you must have single-minded devotion to your goal.”

— Dr. A. P. J. Abdul Kalam

Former President of India | Missile Man of India

India's defence and aerospace manufacturing story is the story of a nation that spent nearly eight decades converting strategic vulnerability into industrial capability. At Independence in 1947, India possessed political sovereignty but limited technological sovereignty. Its armed forces depended heavily on foreign-origin aircraft, weapons and military equipment, while domestic industry lacked the depth to independently design and manufacture complex defence systems at scale.

Today, that equation has changed. India designs and manufactures combat aircraft, helicopters, missiles, artillery, warships, radars, electronic warfare systems, armoured vehicles, ammunition, unmanned systems and aerospace components, while an expanding private sector and MSME base is entering global defence supply chains. Defence production reached a record ₹1.78 lakh crore in FY2025–26, up 110% from ₹84,643 crore in FY2020–21, while defence exports reached ₹38,424 crore, a 62.66% year-on-year increase over FY2024–25. The private sector alone accounted for about ₹42,000 crore, or 24% of production, in FY2025–26.

This transformation, however, was not created by one policy or one generation. It is the accumulated result of scientists creating technology, engineers converting it into systems, armed forces articulating operational requirements, public-sector enterprises creating production capacity, private companies and MSMEs deepening supply chains, and governments progressively reshaping procurement and industrial policy.

The evolution can be understood as a journey through five broad stages:

Build the Base → Absorb Technology → Develop Indigenous Systems → Build the Industrial Ecosystem → Manufacture for the World.

The story of Indian defence manufacturing is therefore not simply a history of weapons.

It is the history of building an ecosystem.

Building the First Industrial Foundations

India's aerospace journey began before Independence. In 1940, industrialist Walchand Hirachand, with support from the Mysore State and Maharaja Jayachamarajendra Wadiyar, established Hindustan Aircraft Limited in Bangalore. The enterprise became the foundation of what would later evolve into Hindustan Aeronautics Limited (HAL).

After 1947, India initially had to learn to manufacture, maintain and overhaul aircraft before it could aspire to independently design them. Under Prime Minister Jawaharlal Nehru, scientific and industrial development

became central to nation-building. Scientists such as Dr. Homi Jehangir Bhabha and Dr. Shanti Swarup Bhatnagar helped establish institutions that expanded India's capabilities in advanced science, metallurgy, engineering and industrial research.

The transition from assembly to indigenous design began early. The HT-2, designed under V. M. Ghatge at HAL, flew in 1951, followed by aircraft such as the Pushpak, Krishak, Kiran and eventually the HF-24 Marut.

India was learning its first strategic lesson: manufacturing a platform creates capability; designing one creates technological sovereignty.

1958–1983: Building the Defence Technology Engine

The creation of DRDO in 1958 consolidated India's defence research effort and created the technological layer between military requirements and industrial production. Its mandate expanded across missiles, aeronautics, radars, electronic warfare, armaments, combat vehicles, naval systems, communications, advanced materials and unmanned systems.

The 1962 war with China, followed by the wars of 1965 and 1971, reinforced the strategic imperative for self-reliance. India began moving from maintaining foreign equipment, to licensed production, to modification and adaptation, and ultimately towards indigenous design.

The HF-24 Marut, developed with German aerospace designer Kurt Tank and Indian HAL engineers, was an early demonstration of this ambition. It became India's first indigenous jet fighter but also exposed a fundamental weakness: India could design and manufacture an airframe but lacked the high-performance indigenous engine needed to realise its full potential.

That lesson would remain embedded in India's aerospace strategy for decades.

1983: The Missile Revolution

The next decisive leap came with the Integrated Guided Missile Development Programme (IGMDP) in 1983. Led by Dr. A. P. J. Abdul Kalam, with scientists including Dr. V. S. Arunachalam and Dr. R. N. Agarwal, the programme sought to build indigenous capabilities in Prithvi, Agni, Akash, Trishul and Nag.

Its importance extended far beyond missile inventories. India had to master propulsion, guidance, navigation, control systems, telemetry, composites, electronics, testing and systems integration.

The missile programme therefore became a technology multiplier, creating knowledge and industrial capability that would later support wider defence programmes.

India subsequently moved from individual weapons to increasingly complex platforms. The Arjun Main Battle Tank, Pinaka rocket artillery system and Akash air-defence system represented attempts to build indigenous competence in armour, fire control, propulsion, electronics, guidance and systems integration. Indian shipyards simultaneously developed increasing competence in warship design and construction.

Tejas and the Aerospace Technology Challenge

The Light Combat Aircraft programme, ultimately producing Tejas, marked another defining transition. The Aeronautical Development Agency and HAL, with Dr. Kota Harinarayana among the key figures associated with the programme, sought to develop a modern indigenous fighter.

Tejas demanded expertise in aerodynamic design, composite structures, digital flight controls, avionics, mission computers, radar integration, electronic warfare, flight testing, certification and production engineering.

Its significance therefore lies not only in the aircraft itself. Tejas created generations of Indian aerospace engineers and an industrial network capable of working on a modern combat-aircraft architecture.

At the same time, the Kaveri engine programme demonstrated how difficult true aerospace sovereignty remained. India could design an aircraft but still lacked complete mastery over its propulsion system.

The lesson was strategic:

Manufacturing sovereignty is not the same as technology sovereignty.

Space, Strategic Technology and International Partnerships

India's space programme provided another technological pillar. Dr. Vikram Sarabhai established the foundations of India's space effort, while Prof. Satish Dhawan institutionalised its systems-engineering culture. Scientists including Dr. U. R. Rao, Dr. K. Kasturirangan, Dr. K. Sivan and A. P. J. Abdul Kalam contributed to the development of satellites, launch vehicles, propulsion, avionics, materials and precision manufacturing.

These capabilities created important dual-use technologies relevant to defence and aerospace.

The BrahMos programme demonstrated another model: strategic autonomy through international partnership. India and Russia combined complementary capabilities to create a sophisticated supersonic cruise missile while developing an Indian industrial and manufacturing base around the programme.

Technology denial following India's nuclear tests further reinforced the importance of indigenous capability in propulsion, guidance, electronics, sensors, materials and strategic systems.

2000–2014: From State Production to an Emerging Ecosystem

By the beginning of the twenty-first century, India's defence-industrial base had become significantly broader. HAL was developing indigenous aircraft and helicopters; Bharat Electronics Limited (BEL) expanded in radars, communications and electronic warfare; Bharat Dynamics Limited (BDL) became an important missile-production organisation; MIDHANI developed specialised materials and alloys; while shipbuilders such as Mazagon Dock Shipbuilders and Garden Reach Shipbuilders & Engineers expanded India's naval manufacturing capability.

More importantly, the private sector began entering defence supply chains.

The model was changing from:

Government laboratory → DPSU → Armed Forces

to:

Government R&D → Prime contractor → Private industry → MSMEs → Academia → Global partner → Armed Forces.

2014–2018: From Make in India to an Ecosystem

The launch of Make in India in 2014 marked a major policy transition. The objective moved beyond manufacturing selected systems domestically towards creating an ecosystem involving private industry, MSMEs, foreign OEMs, technology partnerships and exports.

The Defence Procurement Procedure 2016 institutionalised this shift by giving top priority to Buy (Indian-IDDM) – Indian Designed, Developed and Manufactured – and increasing emphasis on Indian content, private production agencies and MSME participation. The Make procedure also allowed government funding of up to 90% of development costs for eligible Indian industry projects.

The Strategic Partnership model further sought to connect Indian private companies with global OEMs for technology transfer and domestic manufacturing.

Then came iDEX in 2018, changing the innovation model itself. Instead of relying exclusively on large government laboratories and DPSUs, iDEX brought startups, MSMEs, individual innovators, academia and R&D institutions into the defence technology pipeline. By February 2025, iDEX had opened 549 problem statements, involved 619 startups/MSMEs and signed 430 contracts, while 43 products worth more than ₹2,400 crore had been procured from iDEX-supported startups and MSMEs.

2020 Onwards: Aatmanirbharta and Industrial Scale

The Defence Acquisition Procedure 2020, Positive Indigenisation Lists, SRIJAN portal, Technology Development Fund and Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu deepened the ecosystem.

The policy objective increasingly became:

Design → Develop → Prototype → Test → Certify → Manufacture → Scale → Export.

The result is visible in the numbers. Defence production rose from ₹74,054 crore in FY2016–17 to ₹84,643 crore in FY2020–21 and then accelerated to ₹1.78 lakh crore in FY2025–26. The official series records a particularly strong post-2020 expansion.

The export story is even more striking. Defence exports rose from ₹1,522 crore in FY2016–17 to ₹4,682 crore in FY2017–18 and ₹10,746 crore in FY2018–19, before recovering strongly after the pandemic. They reached ₹21,083 crore in FY2023–24, ₹23,622 crore in FY2024–25 and ₹38,424 crore in FY2025–26.

India is therefore moving beyond manufacturing for itself.

It is beginning to manufacture for the world.

The Strategic Transition

From Walchand Hirachand and V. M. Ghatge, to Bhabha, Bhatnagar, Sarabhai and Dhawan; from Kurt Tank and the Marut generation, to A. P. J. Abdul Kalam, V. S. Arunachalam, R. N. Agarwal and Kota Harinarayana; from HAL, DRDO, BEL, BDL, MIDHANI and Indian shipyards to today's private companies, MSMEs and iDEX startups – the evolution has been generational.

The achievement is not merely that India now produces more weapons.

It is that India has progressively built the scientific institutions, engineering talent, manufacturing infrastructure, procurement mechanisms, private-sector participation, innovation ecosystem and export architecture required to sustain a defence-industrial base.

The journey can therefore be summarised as:

Period	Evolution of India's Defence & Aerospace Manufacturing
1947	Import Dependence
1950s	Build the Industrial Base
1960s–70s	Absorb and Adapt Technology
1980s	Develop Strategic Technologies
1990s	Build Indigenous Weapon Systems
2000s	Develop Indigenous Platforms
2014	Make in India
2016	Indian Design, Development & Manufacturing
2018	Startup-led Innovation through iDEX
2020 onwards	Aatmanirbharta, Indigenisation & Defence Industrial Corridors
2025–26	Scale Production & Expand Defence Exports
2047	Make for the World

The central question for the next phase is therefore no longer whether India can manufacture for India.

It is whether India can control enough of the technology stack, intellectual property, supply chain, production process and systems architecture to become a globally competitive defence and aerospace manufacturing power.

That is the strategic journey from Import Dependence to Aatmanirbharta – and ultimately from "Make in India" to "Make for the World."

The Global Defence Manufacturing Landscape

The global defence manufacturing sector is undergoing a structural transformation. Unlike the post-Cold War period, when defence industries were shaped by declining budgets and consolidation, today's environment is defined by the war in Europe, instability in the Middle East, US-China strategic competition, Indo-Pacific tensions and the rapid emergence of AI, autonomous systems, space, cyber and electronic warfare. Governments are therefore reconsidering not only how much they spend on defence, but where and how that capability is produced.

According to SIPRI 2026, global military expenditure reached USD 2.887 trillion in 2025, growing 2.9% in real terms and marking the 11th consecutive year of growth. Spending has increased 41% since 2016, with the global military burden reaching 2.5% of GDP. More importantly, excluding the United States, global military expenditure increased 9.2% in 2025, demonstrating that the current rearmament cycle is becoming geographically broader.

Global Defence Spending, 2025

Country	Military Expenditure	YoY Growth
United States	USD 954 bn	-7.5%
China	USD 336 bn	+7.4%
Russia	USD 190 bn	+5.9%
Germany	USD 114 bn	+24%
India	USD 92.1 bn	+8.9%

Together, the top five accounted for 58% of global military expenditure. Regionally, Europe increased spending by 14% to USD 864 billion, while Asia and Oceania rose 8.1% to USD 681 billion. Europe's military burden reached 3.2% of GDP, reflecting a decisive movement from inventory management towards industrial replenishment and rearmament.

The consequence for industry is profound: defence spending is increasingly becoming defence manufacturing demand. SIPRI's Top 100 arms-producing and military-services companies generated USD 679 billion in arms revenues in 2024, up 5.9% year-on-year and 26% over 2015-24. US companies alone generated USD 334 billion, while India's HAL, BEL and BDL together generated USD 7.5 billion, highlighting both India's progress and the scale of its remaining industrial gap.

The global arms trade is also being rewritten. Major-arms transfers in 2021-25 were 9.2% higher than in 2016-20, while European imports surged 210%. The United States accounted for 42% of global arms exports, followed by France at 9.8%, Russia at 6.8% and Germany at 5.7%. At the same time, emerging suppliers such as South Korea, Türkiye, Israel and Italy are challenging the traditional supplier hierarchy.

India occupies a strategically important position within this changing landscape. It remained the world's second-largest recipient of major arms, accounting for 8.2% of global imports, but its import volume declined 4% between 2016–20 and 2021–25. Russia's share of India's imports fell from 51% to 40%, while France and Israel accounted for 29% and 15%, respectively – indicating diversification alongside localisation.

The defining lesson of recent conflicts, however, is that platform superiority without manufacturing resilience is strategically fragile. The global industry is moving away from just-in-time production towards strategic inventories, surge capacity, multiple suppliers and resilient supply chains. Critical minerals, semiconductors, propulsion, sensors and specialised materials are increasingly national-security assets.

Simultaneously, the defence-industrial base is shifting from traditional platforms – aircraft, ships, tanks, missiles and artillery – to a technology stack comprising AI, autonomy, semiconductors, sensors, cyber, space, electronic warfare, robotics, advanced materials, hypersonics and secure communications. The boundary between defence, aerospace, electronics, space and artificial intelligence is rapidly disappearing.

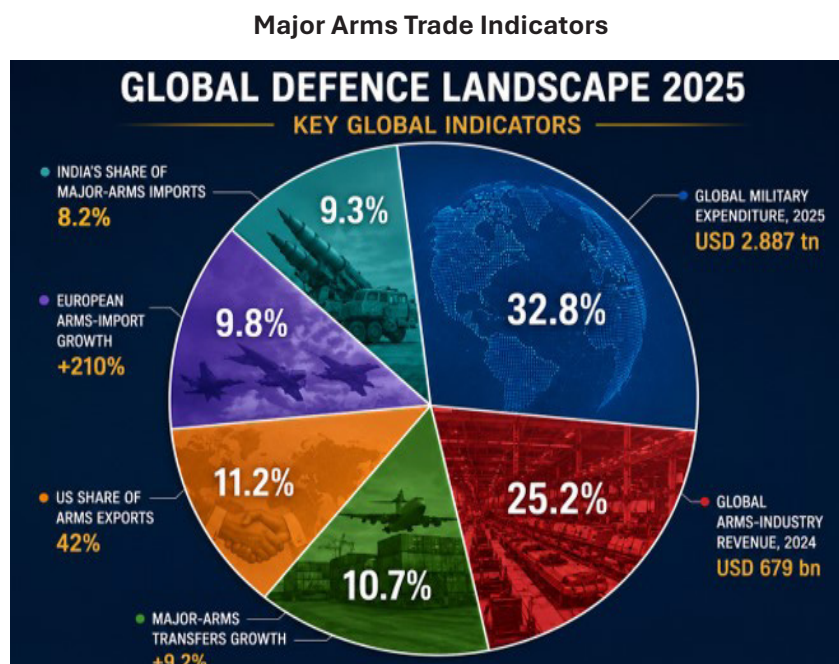
For India, this restructuring represents a strategic opportunity. Defence production reached ₹1.78 lakh crore in FY2025–26, while exports reached ₹38,424 crore, with the private sector contributing approximately 24% of production and 45.16% of exports.

The strategic objective, therefore, should not be complete autarky, but a globally integrated and strategically resilient Indian defence-industrial ecosystem – one capable of owning critical technologies, strengthening supply chains, scaling production and competing internationally.

The global contest is consequently shifting from platform competition to ecosystem competition.

The decisive question is no longer who builds the best aircraft, missile or warship – but who controls the technology, supply chain, manufacturing capacity and industrial resilience behind it.

For India, this is the opportunity to evolve from one of the world's largest defence markets into a major global defence manufacturing and export hub – turning “Make in India” into “Make for the World.”



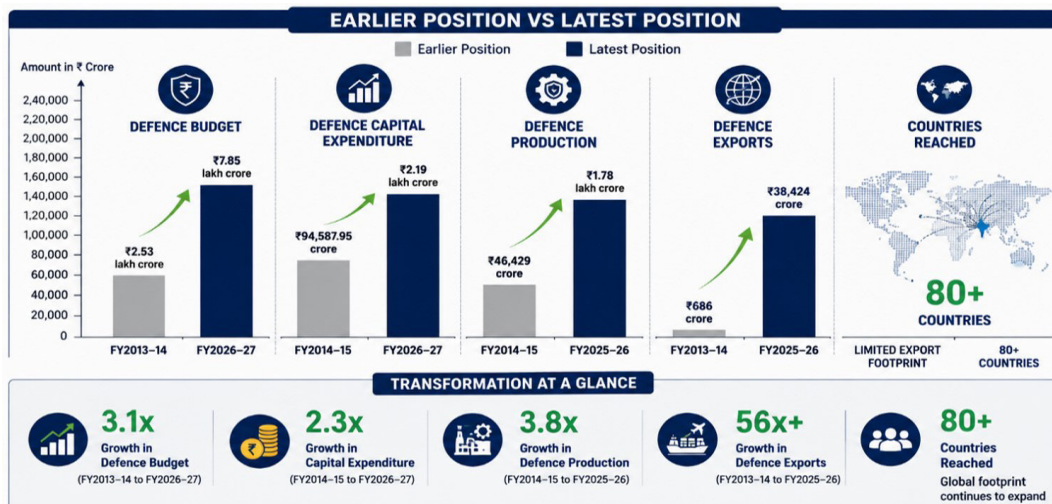
India's Defence Manufacturing Journey

India's defence manufacturing journey is no longer a story of simply reducing imports; it is the story of building national capability, industrial scale, technological depth and global credibility. Over the past decade, India has moved from a predominantly buyer-driven defence model towards an ecosystem in which the Government, DRDO, DPSUs, private companies, MSMEs, startups and academia increasingly participate in the design, development, production and export of military systems. The transformation has been driven by Make in India, Aatmanirbhar Bharat, procurement reforms, higher capital expenditure, indigenous R&D and growing private-sector participation.

The Numbers Behind the Transformation

The scale of this shift is visible in the financial trajectory. The overall defence budget increased from ₹2.53 lakh crore in FY2013–14 to ₹7.85 lakh crore in FY2026–27, while defence capital expenditure rose from ₹94,587.95 crore in FY2014–15 to ₹2.19 lakh crore. At the same time, indigenous defence production increased from ₹46,429 crore in FY2014–15 to ₹1.78 lakh crore in FY2025–26.

The production milestone is particularly significant. India's ₹1.78 lakh crore defence production in FY2025–26 represented a 15.6% increase over FY2024–25 and a 110% increase over FY2020–21, when production stood at ₹84,643 crore. DPSUs and other PSUs contributed approximately 76%, while the private sector accounted for 24%, demonstrating the gradual emergence of a more diversified industrial base.



From State-Led Production to an Industrial Ecosystem

The structural transformation has been equally important. India now has 16 DPSUs, around 500 licensed defence companies and nearly 17,000 MSMEs supporting the defence ecosystem. Defence industrial licences increased from 258 in 2015 to 834 by March 2026, indicating a significant expansion of private-sector participation. The 2021 restructuring of the Ordnance Factory Board into seven new DPSUs was another major institutional reform intended to improve efficiency, accountability and competitiveness.

The two Defence Industrial Corridors have added a geographical dimension to this transformation. By April 2026, the Uttar Pradesh Defence Industrial Corridor had attracted investment commitments of ₹42,057 crore, while the Tamil Nadu Defence Industrial Corridor had attracted ₹32,699 crore. These corridors are intended to create integrated clusters encompassing manufacturing, testing, technology development and supply-chain capabilities.

Building Indigenous Technology

The most strategically important change is occurring in R&D and innovation. Defence R&D allocation increased from ₹13,716 crore in FY2014–15 to ₹29,100 crore in FY2026–27, an increase of more than 112%. In 2022–23, 25% of the defence R&D budget was opened to industry, startups and academia, widening the technology-development base beyond traditional government laboratories.

The iDEX ecosystem has emerged as a major bridge between military requirements and entrepreneurial innovation. With an approved outlay of ₹498.78 crore for 2021–26, supplemented by the ₹750 crore ADITI scheme for 2023–26, iDEX had engaged 676 startups, MSMEs and innovators and signed 551 design and development contracts by March 2026.

Innovation Mechanism	Strategic Role
iDEX	Startup/MSME-led defence innovation
ADITI	Development of advanced and strategic technologies
TDF	Grants for critical indigenous technologies
DRDO–Industry DcPP	Technology transfer and production partnerships
DIA-CoE	Industry-academia research
Defence Testing Portal	Access to DRDO testing infrastructure

The DRDO–industry partnership model has also expanded substantially. By March 2026, 134 companies had partnered with DRDO as Development-cum-Production Partners or Production Agencies, with 2,180 technology-transfer agreements signed and more than 2,780 IPRs opened for Indian industry.

Procurement as an Industrial Policy Instrument

Procurement reform has increasingly become a tool of industrial strategy. DPP 2016, DAP 2020, DPM 2025 and the draft DAP 2026 progressively emphasized indigenous design, domestic content, faster procurement and wider participation by Indian industry. Under DAP 2020, the DAC accorded AoNs for more than ₹6 lakh crore worth of DRDO-designed and Indian-industry-manufactured systems, including major programmes such as 97 Tejas Mk-1A aircraft and 156 LCH Prachand helicopters.

The Srijan Portal and Positive Indigenisation Lists have further converted imported requirements into industrial opportunities. By May 2026, five Positive Indigenisation Lists covering 5,012 DPSU items had been notified, while more than 15,700 defence items had been indigenized through the Srijan ecosystem during the previous five years.

From Self-Reliance to Global Competitiveness

The most visible outcome is exports. Defence exports increased from just ₹686 crore in FY2013–14 to ₹38,424 crore in FY2025-26 – more than 55-fold – with Indian defence products now reaching over 80 countries and the exporter base expanding to 145 firms. The Government has set a target of ₹50,000 crore in defence exports by 2029.

This marks the most important strategic transition in India's defence manufacturing journey:

Import → Indigenise → Design → Manufacture → Scale → Export.

India's challenge for the next phase is therefore not merely to produce more defence equipment. It is to own critical technologies, deepen supply chains, build globally competitive OEMs, strengthen MSMEs, integrate foreign technology intelligently and create export-oriented manufacturing capacity.

The journey from Make in India to Make for the World will ultimately determine whether India becomes not merely one of the world's largest defence markets, but a globally consequential defence manufacturing power by 2047.

India's Aerospace & Defence Industrial Ecosystem

India's aerospace and defence industrial ecosystem has evolved from a predominantly state-controlled production structure into a multi-layered industrial network comprising government R&D institutions, DPSUs, private OEMs, MSMEs, startups, academia, testing agencies and global technology partners. Its strategic significance lies not merely in producing military equipment, but in developing the ability to design, develop, manufacture, integrate, test, maintain and export complex defence systems.

The scale of this transformation is increasingly measurable. India's defence production reached a record ₹1.78 lakh crore in FY2025–26, up 15.6% year-on-year and 110% from FY2020–21. DPSUs and other PSUs contributed about 76%, while the private sector reached an all-time-high 24%, or approximately ₹42,000 crore.

Ecosystem at a Glance

Ecosystem Layer	Principal Role	Recent Development
DRDO	R&D, strategic technologies, technology transfer	2,180 technology-transfer agreements; 2,780+ IPRs opened to industry
DPSUs	Large-scale production & systems integration	~76% of FY2025–26 production
Private Industry	Platforms, subsystems, integration & exports	~₹42,000 crore production
MSMEs	Components, subsystems & specialised manufacturing	~16,000 MSMEs participating
Startups	Emerging technologies & rapid innovation	676 startups/innovators engaged through iDEX
Academia	Research, skills & deep technology	Defence Industry-Academia CoEs
Defence Industrial Corridors	Manufacturing clusters & supply chains	UP and Tamil Nadu corridors
Global OEMs	Technology, investment & global supply-chain integration	Increasing partnerships and localisation

The DRDO–industry interface is becoming particularly important. By March 2026, 134 companies had partnered with DRDO as Development-cum-Production Partners or Production Agencies. DRDO had signed 2,180 technology-transfer agreements, while more than 2,780 IPRs had been opened for use by Indian industry. Its wider industrial network includes more than 2,200 industries capable of producing subsystems, systems and equipment.

From Public-Sector Dominance to a Broader Industrial Base

The private sector is now becoming a structural component rather than a peripheral supplier. India has expanded to around 16,000 MSMEs participating in defence manufacturing, including companies working in drones, avionics, electronics, precision engineering and other specialised areas.

This transition is strategically important because modern defence capability is increasingly determined by the depth of the supply chain beneath the prime contractor. A fighter aircraft, missile or naval platform cannot be sustained by a single OEM; it requires hundreds or thousands of suppliers covering materials, electronics, machining, software, sensors, propulsion and maintenance.

Corridors, Indigenisation and Manufacturing Geography

The two Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu are intended to provide this ecosystem with geographical concentration, infrastructure and supply-chain connectivity. By April 2026, investment commitments had reached ₹42,057 crore in UP and ₹32,699 crore in Tamil Nadu.

The indigenisation architecture is simultaneously creating demand for domestic suppliers. By May 2026, five Positive Indigenisation Lists covering 5,012 DPSU items had been notified, while more than 15,700 defence items had been indigenised during the preceding five years. DPSUs had placed domestic orders worth ₹9,782 crore, creating opportunities for MSMEs, startups and research institutions.

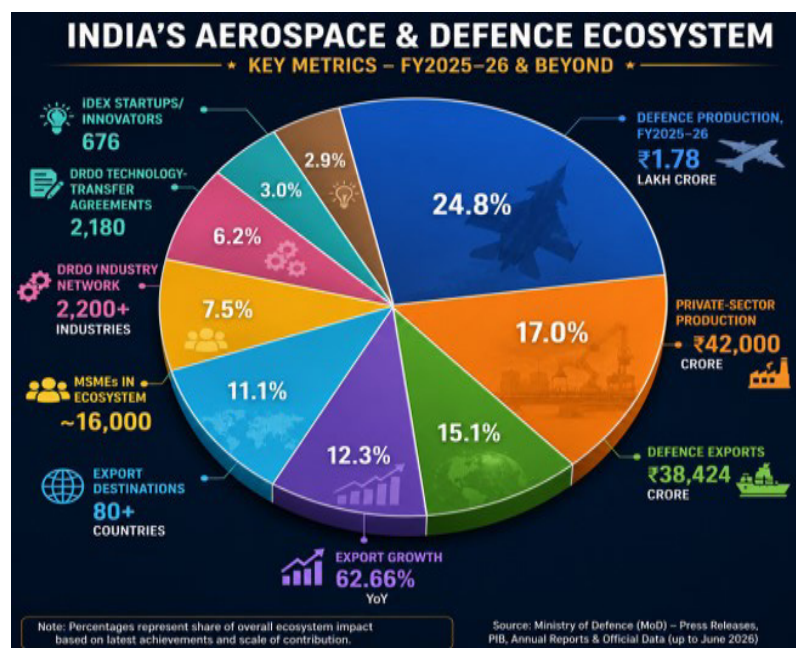
Innovation Is Becoming an Industrial Capability

The ecosystem is also shifting from traditional government-led R&D towards distributed innovation. IDEX has brought startups and MSMEs directly into military technology development, while the Technology Development Fund supports critical indigenous technologies with grants of up to ₹50 crore. As of June 2026, 80 TDF projects worth ₹334 crore were under implementation, alongside an additional ₹500 crore corpus for deep-tech and emerging technologies.

The direction of travel is increasingly visible in advanced manufacturing. The 2026 National Defence Industries Conclave focused on AI, robotics, additive manufacturing, digital twins, automation and smart materials – technologies that will increasingly determine aerospace and defence competitiveness.

The Strategic Outcome: From Manufacturer to Global Supplier

The strongest evidence of ecosystem maturity is India's export performance. Defence exports reached a record ₹38,424 crore in FY2025–26, growing 62.66% over the previous year, with the private sector contributing 45.16% and DPSUs 54.84%. Indian defence products are now exported to more than 80 countries.



Future Ready Manufacturing

India's next phase of defence manufacturing is moving beyond the conventional objective of indigenisation towards the creation of a technology-intensive, digitally enabled and globally integrated manufacturing ecosystem. The strategic question is no longer simply whether India can manufacture a weapon domestically, but whether it can design the technology, manufacture critical components, scale production rapidly, maintain the platform through its lifecycle and export it competitively.

This transition is already visible in the scale of India's industrial base. Defence production reached ₹1.78 lakh crore in FY2025–26, a 15.6% increase over the previous year and 110% higher than FY2020–21. The private sector now contributes approximately 24% of total defence production, while India's defence products are exported to more than 80 countries.

The New Manufacturing Architecture

Strategic Layer	Emerging Indian Capability
Combat aviation	Tejas Mk1A, AMCA
Military aviation manufacturing	C-295 Final Assembly Line
Unmanned systems	Drones, loitering systems, counter-UAS
Naval manufacturing	Warships, underwater weapons & naval systems
Advanced manufacturing	Robotics, additive manufacturing, automation
Digital engineering	Digital twins, simulation, AI-enabled design
Critical electronics	Semiconductors, sensors, avionics
Innovation	iDEX, ADITI, TDF
Industrial depth	MSMEs, startups and private OEMs
Testing & certification	New test centres and industrial infrastructure

AMCA: Manufacturing for the Fifth-Generation Era

The Advanced Medium Combat Aircraft (AMCA) represents perhaps the most consequential test of India's future aerospace manufacturing capability. Its importance extends beyond developing a fifth-generation fighter. India is attempting to create an industrial ecosystem capable of handling stealth structures, advanced composites, mission systems, avionics, electronic warfare, sensor fusion, weapons integration, digital engineering and complex systems integration.

In May 2026, the foundation stone was laid for an AMCA Core Integration & Flight Testing Centre at Puttaparthi, Andhra Pradesh, intended to accelerate the development and testing of AMCA and other future indigenous platforms.

This is significant because future aerospace manufacturing will increasingly depend upon integration and test infrastructure, not merely factory capacity.

Tejas: From Design Capability to Industrial Scale

The Tejas programme is now entering the more important phase of industrialisation. India's objective is shifting from proving that it can design a fighter aircraft to proving that it can produce one consistently, at scale and with a reliable domestic supply chain.

This is the manufacturing challenge that separates a successful prototype from a successful aerospace industry.

The lessons from Tejas are directly relevant to AMCA: India needs not only designers but also tiered suppliers, precision machining, composite manufacturing, avionics production, quality systems, certification capability and lifecycle-support infrastructure.

C-295: Creating a Private Aerospace Manufacturing Ecosystem

The Tata-Airbus C-295 programme represents another important model. The Vadodara facility is India's first private-sector Final Assembly Line for military aircraft. Of the 56 aircraft contracted, 40 are to be manufactured in India, while the programme is designed to develop a wider Indian supplier base.

The strategic value is therefore larger than the aircraft itself. It provides India with experience in global aerospace production standards, quality assurance, supply-chain management, tooling, certification and OEM-linked manufacturing.

This is precisely the type of capability required if India is to become a global aerospace manufacturing hub.

Drones: The Next Mass-Manufacturing Opportunity

One area that deserves significantly greater attention is unmanned systems.

At the National Defence Industries Conclave 2026, Defence Minister Rajnath Singh called for India to become a global hub for indigenous drone manufacturing, emphasising that self-reliance must extend beyond the final drone to moulds, software, engines, batteries and other critical components. The government also unveiled more than 200 defence problem statements under DISC 14 and ADITI Challenges 4.0.

This is strategically important because drones represent a different manufacturing philosophy from traditional defence platforms.

The future may require:

hundreds → thousands → potentially millions of autonomous systems, rather than dozens of expensive platforms.

That demands mass production, modular architectures, low-cost electronics, rapid design iteration, software updates and distributed manufacturing.

India therefore has an opportunity to build a drone ecosystem similar to the way it developed large-scale automotive and electronics manufacturing.

Semiconductors: The Missing Layer of Defence Manufacturing

A truly future-ready defence industry cannot remain dependent on imported microelectronics.

Modern radars, electronic-warfare systems, missiles, drones, satellites, communications equipment and AI-enabled platforms increasingly depend upon specialised processors, sensors, RF components, power electronics and advanced semiconductor packaging.

India's Semicon 2.0, approved in July 2026 with a ₹1.275 lakh crore outlay, explicitly seeks to deepen semiconductor design, manufacturing, equipment, materials and packaging capabilities. Twelve manufacturing projects had already been approved with cumulative investment exceeding ₹1.64 lakh crore, covering silicon, silicon-carbide, gallium-nitride and packaging capabilities.

For defence, this could become a foundational industrial capability rather than simply an electronics initiative.

Manufacturing Is Becoming Digital

The next-generation factory will increasingly combine:

AI + robotics + automation + digital twins + additive manufacturing + simulation + advanced materials.

The Ministry of Defence's 2026 National Defence Industries Conclave specifically highlighted advanced manufacturing technologies, while the Government has identified robotics, AI, additive manufacturing and digital engineering as important components of India's future defence industrial base.

The implication is profound: future competitiveness will increasingly depend upon how quickly India can move from digital design to physical production.

Propulsion and Critical Technologies: The Hardest Frontier

India's future manufacturing strategy must also address the technologies that remain deepest in the value chain:

- aero-engine technology;
- high-temperature materials;
- semiconductor devices;
- seekers and advanced sensors;
- electronic warfare components;
- secure communications;
- advanced batteries;
- propulsion systems;
- precision actuators;
- high-end machine tools;
- specialty chemicals and energetic materials.

This is where Technology Development Fund, iDEX, ADITI and DRDO's Development-cum-Production Partner model become important. By March 2026, DRDO had more than 2,200 industries in its industrial network,

134 companies had partnered as Development-cum-Production Partners or Production Agencies, and 2,180 technology-transfer agreements had been signed.

The Technology Development Fund was also supporting 80 projects worth ₹334 crore as of June 2026, while 15 DRDO Industry-Academia Centres of Excellence were pursuing research across nearly 82 technology areas.

The Procurement System Must Now Match the Manufacturing Ambition

A future-ready manufacturing ecosystem cannot be built without a future-ready procurement system.

The draft DAP 2026 proposes greater emphasis on indigenous design, faster acquisition and scaling of production. It proposes increasing the indigenous-content requirement under Buy (Indian-IDDMM) from 50% to 60%, while restructuring procurement categories and introducing mechanisms intended to strengthen domestic manufacturing. It is important to note that this is a draft, not yet the final DAP.

This evolution is critical because procurement is the largest demand signal available to the defence industry.

No manufacturing ecosystem can scale without predictable demand.

From Factory Capacity to Manufacturing Resilience

The ultimate definition of future-ready manufacturing should therefore be much broader than production capacity.

India needs an ecosystem capable of:

Designing → Prototyping → Testing → Certifying → Manufacturing → Scaling → Repairing → Upgrading → Exporting.

It must also be capable of surging production during conflict, replacing imported components quickly and maintaining platforms when global supply chains are disrupted.

The strategic architecture emerging in India can therefore be represented as:

DRDO + Armed Forces + Private OEMs + DPSUs + MSMEs + Startups + Academia + Semiconductor Industry + Global OEMs + Testing Infrastructure

This is the real meaning of future-ready manufacturing.

India has already demonstrated that it can produce aircraft, missiles, warships, artillery, radars and drones. The next challenge is considerably more ambitious: to build the industrial depth underneath those platforms.

The objective for 2047 should therefore not be merely to make more defence equipment in India. It should be to ensure that the critical technologies, components, manufacturing processes, intellectual property and supply chains behind India's defence systems are increasingly designed, controlled and scaled in India – while connecting Indian industry to global markets.

That is the transition from “Make in India” to “Design in India, Build in India and Make for the World.”

Procurement Reforms Driving Manufacturing

India's defence procurement system is undergoing a fundamental transformation: procurement is no longer being treated merely as a mechanism to buy military capability; it is increasingly being used as an instrument of industrial policy, technology development and national capability creation. This shift is central to India's transition from an import-dependent defence market towards a globally competitive manufacturing ecosystem.

The change became particularly visible with DPP 2016, which introduced Buy (Indian-IDDMM – Indian Designed, Developed and Manufactured – as the highest-priority category for capital acquisition. The policy also gave greater preference to Buy (Indian), Buy & Make (Indian) and Make categories over global procurement. The objective was to ensure that military demand translated into domestic design, manufacturing and technology development.

Evolution of Procurement as an Industrial Instrument

Period	Procurement Reform	Manufacturing Impact
2016	DPP 2016; Buy (Indian-IDDMM) introduced	Indian design and manufacturing receive highest priority
2018–19	Simplified Make procedures; MSME participation	Lowers entry barriers for smaller manufacturers
2020	DAP 2020	Aatmanirbharta becomes central to acquisition
2022	DAP amendments	Indigenous sourcing becomes the default for modernisation
2023	Higher indigenous-content requirements	Greater domestic component manufacturing
2025	DPM 2025	Revenue procurement simplified; domestic suppliers strengthened
2026	Draft DAP 2026	Proposed 60% IC for Indian-IDDMM and faster, scalable acquisition

From "Buy Indian" to "Design in India"

The most important conceptual change has been the movement from where a system is manufactured to where its technology is designed and controlled.

Under DPP 2016, Buy (Indian-IDDMM) was established as the preferred category, covering indigenously designed equipment with specified indigenous-content thresholds. The accompanying Make reforms also introduced government-supported development and greater opportunities for MSMEs. Government-funded Make-I projects

could receive substantial development support, while Make-II created a pathway for industry-funded innovation and even industry-originated proposals.

This matters because a defence industry cannot become technologically sovereign simply by assembling imported components.

The strategic hierarchy is:

Import → Assemble → Manufacture → Integrate → Design → Own Technology → Export.

Procurement policy is increasingly designed to push Indian industry towards the right-hand side of this spectrum.

DAP 2020: Procurement Becomes an Aatmanirbharta Tool

The Defence Acquisition Procedure 2020, effective from October 2020, represented the next major step. It placed Buy (Indian-IDDM) at the top of the procurement hierarchy and introduced measures including Positive Indigenisation Lists, greater indigenous-content requirements, Make-III for imported spares and provisions encouraging MSMEs and smaller shipyards.

The policy direction subsequently became even stronger. In 2022, the Government amended DAP 2020 to state that modernization requirements of the Defence Services and Indian Coast Guard should be sourced indigenously, with foreign sourcing of capital acquisitions treated as an exception requiring specific approval.

This is strategically significant.

The procurement system is effectively creating a guaranteed domestic demand signal for Indian manufacturers.

For industry, that changes the investment equation. A company is more willing to invest in specialised machinery, tooling, certification, engineering manpower and production capacity when it can see a credible long-term procurement market.

Procurement Creates the Industrial Multiplier

The scale of government demand is now becoming one of the strongest drivers of manufacturing.

For FY2025–26, 75% of the modernization budget – ₹1,11,544.83 crore – was earmarked for procurement from domestic sources, with ₹27,886.21 crore specifically allocated for procurement from domestic private industry. For FY2026–27, the Government has further earmarked ₹1.39 lakh crore, or 75% of the Capital Acquisition Budget, for procurement through domestic defence industries.

Domestic Procurement as an Industrial Demand Signal

FY	Domestic Procurement Allocation	Strategic Effect
2020–21 onwards	Increasing domestic earmarking	Creates predictable Indian demand
2025–26	₹1.115 lakh crore	75% of modernisation budget
2025–26 – Private Industry	₹27,886 crore	Direct private-sector demand
2026–27	₹1.39 lakh crore	75% of Capital Acquisition Budget

The strategic impact extends far beyond the prime contractor. A major aircraft, missile, warship or radar programme creates demand for machining, composites, electronics, software, cables, batteries, sensors, propulsion components, testing, logistics and maintenance.

Consequently, one large defence contract can create an industrial multiplier across hundreds of MSMEs.

DPM 2025: The Other Half of Procurement

Capital procurement receives most of the strategic attention, but India's manufacturing ecosystem also depends on revenue procurement – spares, maintenance, consumables, repairs and operational support.

The Defence Procurement Manual 2025, effective from 1 November 2025, was designed to simplify and rationalise revenue procurement and facilitate approximately ₹1 lakh crore of procurement by the Services and other MoD establishments. It also seeks to ease working-capital pressures on industry, simplify procedures and strengthen R&D participation by industry, academia and DPSUs.

This is important from a manufacturing perspective because lifecycle support is itself an industrial sector.

A future-ready Indian defence industry must not merely build a platform and hand it over. It must be capable of supplying:

spares → repairs → upgrades → maintenance → software → overhaul → lifecycle support.

DPM 2025 therefore strengthens the connection between procurement and sustained industrial activity.

Indigenous Content Is Moving Deeper into the Supply Chain

One of the most important recent reforms is the increasing emphasis on actual Indian value addition, rather than simply Indian ownership of the prime contractor.

The Defence Acquisition Council decided in 2023 that, across procurement categories, a minimum 50% of indigenous content should be in the form of materials, components and software manufactured in India.

This is strategically important because it pushes localisation below the platform level.

Instead of asking:

Was the aircraft assembled in India?

the procurement system increasingly asks:

How much of the aircraft's actual value chain exists in India?

That distinction is critical for developing aerospace and defence supply-chain depth.

Draft DAP 2026: The Next Phase

The draft Defence Acquisition Procedure 2026 signals the next stage of reform. It proposes reducing procurement categories from five to four, formally defining indigenous design and increasing the indigenous-content requirement for Buy (Indian-IDD) from 50% to 60%, while introducing incentives for higher indigenous content. The draft also seeks to accelerate acquisition timelines and support scaling of production.

It is important to note that DAP 2026 remains a draft unless and until formally approved.

Nevertheless, its direction is strategically revealing:

higher indigenous content + indigenous design + faster acquisition + scalable production.

In other words, procurement policy is increasingly being designed around the requirements of an industrial ecosystem rather than simply around the purchase of individual platforms.

Procurement and the Rise of MSMEs

The manufacturing transformation cannot be sustained by DPSUs and large private OEMs alone.

DAP reforms have progressively created space for MSMEs, startups and smaller manufacturers. DAP 2020 introduced reservations and simplified pathways for smaller companies, while procurement cases up to specified thresholds have received greater flexibility for registered MSMEs and recognised startups.

This creates a three-tier industrial architecture:

Strategic OEMs / DPSUs

↓

Tier-1 and Tier-2 suppliers

↓

MSMEs / startups / specialised technology companies

The procurement system is therefore becoming a mechanism for industrial diffusion – taking defence expenditure beyond a handful of prime contractors and distributing capability across the wider manufacturing ecosystem.

From Procurement to Production Capacity

The most important strategic consequence is that procurement policy is now influencing investment decisions.

A manufacturer will invest in a new production line only when there is sufficient confidence in:

demand → order visibility → technology → financing → certification → production → export potential.

Government procurement provides the first and often most important component of that equation.

This is why long-term programmes such as Tejas Mk1A, LCH Prachand, warships, submarines, artillery systems, missiles and unmanned platforms are more than acquisition programmes. They are industrial-capacity programmes.

The same logic explains why India's domestic procurement allocation has become strategically important. The Government itself recognises that increased capital procurement from domestic industry has a multiplier effect through ancillary industries, investment and employment.

The Strategic Shift

India's procurement philosophy can therefore be represented as an evolution:

Buy What the Forces Need

↓

Buy from India

↓

Manufacture in India

↓

Design and Develop in India

↓

Build Indian Supply Chains

↓

Scale Indian Production

↓

Export Indian Systems

This is the deeper significance of procurement reform.

The objective is no longer simply to ensure that the Armed Forces receive equipment.

It is to ensure that every major acquisition creates a stronger industrial capability than existed before the contract was signed.

Procurement as the Industrial Engine

Procurement Objective	Industrial Outcome
Buy Indian-IDD	Domestic design capability
Higher indigenous content	Local component ecosystem
Make-I / Make-II	Indigenous technology development
Positive Indigenisation Lists	Predictable domestic demand
MSME participation	Wider industrial base
Domestic procurement earmarking	Investment confidence
DPM 2025	Lifecycle manufacturing and sustainment
DAP 2026 proposal	Higher IC + faster scaling

The strategic significance is particularly visible in programmes such as Tejas, LCH Prachand, artillery systems, missiles, naval platforms and unmanned systems, where procurement has simultaneously created production orders, supplier networks, engineering expertise and opportunities for technology development.

This also changes the relationship between the Ministry of Defence, Armed Forces and industry. The Armed Forces increasingly provide the operational requirement; DRDO and industry develop technologies and

systems; DPSUs and private companies undertake production and integration; and MSMEs increasingly provide specialised components and subsystems. Procurement becomes the mechanism connecting these different layers.

India's procurement reforms therefore represent a broader transition from buying equipment to building an industrial ecosystem around military demand.

The trajectory can be summarized as:

Import → Manufacture → Indigenize → Design → Develop → Scale → Sustain → Export

The significance of the transformation will ultimately be reflected not only in the value of contracts placed with Indian companies, but in the depth of domestic supply chains, technology developed within India, production capacity created, intellectual property generated, skilled employment established and Indian systems entering international markets.

In this context, procurement has become one of the principal mechanisms through which India's defence market is being transformed into a defence manufacturing base.

The evolution of procurement policy is therefore inseparable from the evolution of India's defence-industrial power.

Building Resilient Defence Supply Chains

The resilience of a defence-industrial base is increasingly determined not only by its ability to manufacture major platforms, but by the depth and reliability of the supply chains supporting them. A fighter aircraft, missile, warship, radar or unmanned system depends on hundreds of specialised inputs – propulsion systems, electronics, sensors, precision-machined components, composites, speciality materials, software and testing capabilities. Recent conflicts have demonstrated the strategic importance of these underlying industrial networks. SIPRI notes that growing dependence on concentrated international supply chains has created vulnerabilities for arms producers, with critical materials and components increasingly becoming potential supply-chain chokepoints.

The pressure on these supply chains is increasing alongside global defence demand. SIPRI estimates that global military expenditure reached USD 2.887 trillion in 2025, an increase of 2.9% in real terms and the eleventh consecutive year of growth. Meanwhile, revenues of the world's 100 largest arms-producing and military-services companies reached a record USD 679 billion in 2024, rising 5.9% year-on-year.

Global Supply-Chain Pressure

The international arms trade has also expanded. SIPRI's latest arms-transfer database shows that transfers of major arms increased 9.2% between 2016–20 and 2021–25, while European states increased their imports by 210%. European defence companies are responding with increased production, but SIPRI has simultaneously identified growing concerns over the availability of critical materials and components.

Indicator	Latest figure
Global military expenditure, 2025	USD 2.887 trillion
SIPRI Top 100 arms revenue, 2024	USD 679 billion
Top 100 revenue growth	5.9% YoY
Global major-arms transfers, 2021–25	+9.2% vs 2016–20
European major-arms imports	+210%
European Top 100 arms revenue, 2024	USD 151 billion

This combination of rising demand and constrained industrial capacity has made supply-chain resilience a central issue for defence manufacturers. European companies, for example, recorded a 13% increase in combined arms revenues to USD 151 billion in 2024, with the increase linked to demand generated by the war in Ukraine and European rearmament.

India's Supply-Chain Expansion

India's defence-industrial base has expanded considerably over the past decade. According to the Ministry of Defence, the country now has 16 Defence Public Sector Undertakings, around 500 licensed defence companies and nearly 17,000 MSMEs participating in the sector. The number of defence industrial licences increased from 258 in 2015 to 834 by March 2026.

This expansion is occurring alongside rapid growth in domestic production. India's defence production reached ₹1.78 lakh crore in FY2025–26, representing a 15.6% increase over FY2024–25 and a 110% increase from FY2020–21. The private sector accounted for approximately 24%, or around ₹42,000 crore, while DPSUs and other public-sector organisations contributed approximately 76%.

Indian Supply-Chain Indicator	Latest Position
Defence production, FY2025–26	₹1.78 lakh crore
Private-sector production	~₹42,000 crore
Defence industrial licences	834
Defence MSMEs	~17,000
Defence exporters	145 firms
Export destinations	80+ countries

The growing private-sector contribution is significant because supply-chain resilience requires a broad industrial base rather than dependence on a small number of prime manufacturers. The expansion of MSMEs and licensed private companies has created additional capacity across components, subsystems, electronics, precision engineering and specialised manufacturing.

Indigenisation as a Supply-Chain Strategy

India's most extensive supply-chain intervention has been the systematic identification and indigenisation of imported defence items. The Srijan Defence Portal, launched in August 2020, provides a mechanism through which DPSUs and Service Headquarters identify items for Indian industry – including MSMEs and startups – to manufacture domestically. Positive Indigenisation Lists were introduced in 2021 to further prioritise this process.

By May 2026, the Ministry of Defence had notified five Positive Indigenisation Lists covering 5,012 DPSU items. More than 15,700 defence items, including 3,204 items from the Positive Indigenisation Lists, had been indigenised through the Srijan ecosystem during the preceding five years. DPSUs had placed domestic orders worth ₹9,782 crore, creating additional demand for Indian suppliers.

The supply-chain database is also becoming more extensive. Srijan DEEP, the Department of Defence Production's digital database of defence industries, had recorded more than 41,000 vendors and 270,000 products by May 2026. The database is intended to provide visibility of manufacturers, MSMEs, services and technology providers and support resource pooling during emergencies.

Measure	Achievement by 2026
Positive Indigenisation Lists	5
DPSU items covered	5,012
Items indigenised through Srijan	15,700+
PIL items indigenised	3,204
DPSU domestic orders	₹9,782 crore
Srijan DEEP vendors	41,000+
Products recorded	270,000

This represents a shift from identifying individual imported platforms towards mapping the component-level industrial base.

Defence Industrial Corridors and Geographic Resilience

India is also creating dedicated manufacturing clusters through the Uttar Pradesh and Tamil Nadu Defence Industrial Corridors. By April 2026, the Uttar Pradesh corridor had attracted investment commitments of ₹42,057 crore, including ₹4,409 crore of grounded investment. The Tamil Nadu corridor had attracted commitments of ₹32,699 crore, with actual investments of ₹6,446 crore.

The corridors provide an industrial geography for connecting large manufacturers with MSMEs, testing infrastructure, technology developers and specialised suppliers.

Global Integration, Not Industrial Isolation

India's supply-chain strategy is also developing alongside international partnerships. The country's defence FDI framework permits up to 74% foreign investment through the automatic route for companies requiring a new defence industrial licence and up to 100% through the government route where investment is likely to provide access to modern technology. As of March 2026, defence-sector FDI inflows were reported at ₹6,670.59 crore.

This creates a dual structure: critical capabilities are increasingly being localised while Indian industry remains connected to global OEMs and international technology and supply networks.

The export side demonstrates the growing industrial reach. India's defence exports reached a record ₹38,424 crore in FY2025–26, an increase of 62.66% year-on-year, with Indian defence products reaching more than 80 countries.

The evolution of India's supply-chain architecture can therefore be traced through four parallel developments: Indigenisation of imported components → expansion of domestic suppliers → creation of industrial clusters → integration with global markets.

The strategic character of the defence supply chain is consequently changing. India's manufacturing base is moving from a structure centred primarily on major public-sector production organizations towards a multi-tier network of DPSUs, private OEMs, MSMEs, startups, technology companies and global partners.

For a future-ready defence industry, the critical measure is therefore no longer only the number of platforms manufactured. It is the depth of the industrial network supporting those platforms – from raw materials and components to engineering, testing, maintenance and exports.

India's recent production figures, expanding supplier base, Indigenisation programmes and defence corridors indicate that this deeper supply-chain architecture is already being established. The next phase of the country's defence manufacturing journey will increasingly depend on how effectively these networks can support higher production volumes, advanced technologies, lifecycle sustainment and export-oriented manufacturing.

Technologies That Will Define Defence Manufacturing

The next phase of defence manufacturing is being shaped by a convergence of technologies rather than by any single weapons system. Artificial intelligence is moving into command-and-control, intelligence, surveillance, maintenance and weapon systems; autonomous platforms are changing the economics of unmanned warfare; semiconductor technology is becoming a foundation for sensors and electronic warfare; while quantum technologies, hypersonics, directed-energy systems, advanced materials and space capabilities are opening new manufacturing frontiers.

For India, this technological transition is already reflected in government R&D priorities and industrial programmes. The Ministry of Defence has identified Directed Energy, Hypersonic Weapons, Underwater and Space technologies, Quantum Technology, AI and Machine Learning as important emerging areas. DRDO's technology roadmap additionally covers electronic warfare, radar, propulsion, swarm technology, UAVs, UGVs, quantum technologies, space situational awareness, underwater technologies, sensors, seekers and advanced materials.

Technology Landscape

Technology	Defence-Manufacturing Significance	Indian Development Direction
Artificial Intelligence & ML	Decision support, ISR, predictive maintenance, autonomy	AI-enabled systems, data-centric warfare
Autonomous Systems	UAVs, UGVs, USVs, autonomous navigation	UAS, C-UAS and swarm technologies
Swarm Technology	Coordinated deployment of large numbers of unmanned systems	DRDO swarm-technology programmes
Semiconductors	Processors, RF systems, sensors, EW and avionics	ISM 2.0 and indigenous semiconductor IP
Quantum Technology	Secure communications, sensing, navigation and computing	Military Quantum Mission
Hypersonics	High-speed strike and defence systems	Scramjets, thermal protection and hypersonic vehicles
Directed Energy	Laser/high-power systems for counter-drone and other applications	DRDO laser and DEW research
Electronic Warfare	Spectrum dominance, jamming, detection and deception	AI-enabled EW and cognitive systems

Technology	Defence-Manufacturing Significance	Indian Development Direction
Advanced Radar & Photonics	Detection, tracking, imaging and target discrimination	Cognitive, photonic, AESA and multi-static radar
Space Technology	ISR, communications, navigation and space-domain awareness	Military space and satellite technologies
Cyber & Secure Computing	Protection of military networks and data	Sovereign OS, databases and secure infrastructure
Advanced Materials	Lightweight structures, thermal protection and survivability	Composites, high-temperature materials
Additive Manufacturing	Rapid prototyping, complex components and spares	Defence and aerospace 3D manufacturing
Digital Twins & Simulation	Virtual design, testing and lifecycle management	Advanced digital manufacturing
Robotics & Automation	Production efficiency and autonomous military systems	Smart factories and robotic manufacturing
Advanced Propulsion	Aircraft, missiles, UAVs and hypersonic systems	Turbofan, ramjet, scramjet and electric propulsion
6G & Advanced Communications	High-bandwidth, low-latency tactical networking	Networking and data-centricity
Biotechnology	Soldier protection, medical support and biosecurity	Emerging defence biotechnology
Energy Storage & Power Electronics	UAV endurance, directed energy and electric systems	Batteries, power electronics and energy systems

Artificial Intelligence and Autonomous Systems

AI is becoming a foundational manufacturing technology rather than a standalone defence product. SIPRI's 2026 research describes military AI applications across command, control and communications, intelligence, surveillance and reconnaissance, weapon systems, cyber operations, logistics and maintenance. AI can also be integrated into sensor fusion, pattern recognition, predictive maintenance and autonomous navigation.

For Indian manufacturing, this creates demand for AI-enabled radars, electro-optical systems, autonomous vehicles, drones, decision-support systems and predictive-maintenance architectures. The Indian Army has designated 2026 as the "Year of Networking and Data Centricity", with modernisation efforts focused on technology infusion, networking, UAS and counter-UAS capabilities.

Semiconductors: The Industrial Foundation

Semiconductors are increasingly a strategic layer underneath almost every modern defence system. Radars, electronic-warfare equipment, seekers, avionics, communications systems, autonomous platforms and secure computing all depend upon specialised electronics.

India's Semicon 2.0, approved in July 2026 with an outlay of ₹1,27,500 crore, is designed to expand domestic semiconductor design and manufacturing, including equipment, materials, packaging and Indian semiconductor IP. The programme identifies six pillars including design and manufacturing and builds upon an ecosystem in which 105 startups were already developing chips.

The defence relevance is direct: greater domestic semiconductor capability creates an industrial base for RF electronics, processors, sensors, power electronics and secure computing.

Quantum Technologies

Quantum technology is moving from research laboratories towards defence planning. In January 2026, Chief of Defence Staff General Anil Chauhan released India's Military Quantum Mission Policy Framework, covering four pillars: quantum communication, quantum computing, quantum sensing and metrology, and quantum materials and devices.

These technologies have potential applications in secure communications, precision sensing, navigation, timing and advanced computing. Their manufacturing implications extend into specialised materials, photonics, sensors, cryogenic systems and quantum devices.

Hypersonics and Advanced Propulsion

Hypersonic systems represent one of the most demanding technology-manufacturing challenges because they combine high-temperature materials, propulsion, aerodynamics, guidance, thermal management and advanced manufacturing.

DRDO's current technology roadmap includes hypersonic glide vehicles, scramjet propulsion, ramjets, thermal-barrier coatings, high-temperature adhesives and sealants, RF-transparent radome coatings and additive-manufactured thermal-protection systems.

The significance for manufacturing is substantial: hypersonics require capabilities extending from specialised materials and energetic systems to precision manufacturing and high-temperature testing.

Directed Energy and Electronic Warfare

Directed-energy systems and electronic warfare are becoming increasingly important components of the modern defence-industrial base. DRDO's Electronics and Communication Systems cluster works on EW systems, radars, electro-optical systems, laser sources and sensors, directed-energy weapons and communications systems.

DRDO's EW roadmap includes AI/ML algorithms, wideband digital receivers, smart jamming, cognitive radio applications, RF chips, signal-processing systems and advanced thermal-management technologies. Its radar

programme includes AI/ML-enabled radar, cognitive radar, distributed radar, photonic radar, low-probability-of-intercept radar, hypersonic-target detection and radar-on-chip technologies.

This represents a major manufacturing transition: the value of a modern defence system increasingly resides in electronics, software, sensors and algorithms as much as in the physical platform.

Space and Underwater Technologies

Space is becoming an increasingly important manufacturing domain for defence. DRDO's technology roadmap includes high-gain LEO antennas, spaceborne communications, AI/ML-based multisensor data fusion, electronic intelligence, space-asset jamming, free-space laser communications and space-based directed-energy research.

Underwater technologies are similarly expanding across sonar, underwater vehicles, underwater communications, sensors and maritime surveillance. DRDO identifies underwater defence technologies, sonar, UUVs and related capabilities within its industry-partner technology areas.

Advanced Manufacturing: The Factory Becomes a Technology Platform

The manufacturing process itself is changing. India's National Defence Industries Conclave 2026 specifically focused on automation, artificial intelligence, robotics, additive manufacturing, digital twins and smart materials, signalling a move towards digitally integrated defence production.

These technologies affect the entire production cycle:

Digital design → Simulation → Digital twin → Additive manufacturing → Automated production → AI-enabled inspection → Testing → Predictive maintenance

Additive manufacturing is particularly relevant to aerospace because it can produce geometrically complex components and support rapid prototyping and specialised spare-parts production. Digital twins and simulation can reduce the dependence on physical prototypes during portions of design and verification.

The Technology Stack India Is Building

The emerging Indian defence-manufacturing technology stack can therefore be represented as:

AI & ML

↓

Autonomy & Robotics

↓

Sensors + Radar + EW

↓

Semiconductors + Photonics

↓

Quantum Technologies

↓

Advanced Materials

↓

Propulsion + Hypersonics

↓

Space + Underwater Systems

↓

Digital Manufacturing + Additive Manufacturing

↓

Secure Networks + Cyber Infrastructure

The significance of this convergence is already visible in India's defence R&D architecture. DRDO's technology portfolio spans AI/ML, electronic warfare, radar, hypersonics, quantum technologies, propulsion, UAVs, UGVs, swarm technology, sensors, space situational awareness, underwater systems, advanced materials and high-performance computing.

For India's aerospace and defence manufacturing sector, the emerging competition is therefore moving beyond individual platforms. The next generation of industrial capability will depend on the ability to combine software, semiconductors, sensors, materials, propulsion, autonomy, communications and advanced manufacturing into integrated systems.

The direction of India's technology agenda reflects this convergence. Government and military institutions are increasingly treating AI, quantum, space, advanced communications, hypersonics, directed energy, autonomy and advanced manufacturing as interconnected elements of future defence capability rather than isolated technology programmes.

The defining feature of future defence manufacturing will therefore be the integration of multiple technology layers into scalable, upgradeable and increasingly software-defined military systems.

India's Path to Global Leadership

India's defence-industrial transformation is entering a phase in which the objective is shifting from building domestic production capacity to establishing global competitiveness. The scale of the change is already visible. Defence production reached a record ₹1.78 lakh crore in FY2025–26, 15.6% higher than the previous year and 110% above FY2020–21. Defence exports reached ₹38,424 crore, increasing 62.66% year-on-year, with Indian defence products now reaching more than 80 countries.

The transformation has also altered the composition of India's industrial base. The private sector accounted for approximately 24% of defence production, or around ₹42,000 crore, in FY2025–26. India now has a substantially wider ecosystem of DPSUs, private companies, MSMEs and technology startups supporting defence production.

India's Emerging Global Position

Indicator	Current Position
Defence production, FY2025–26	₹1.78 lakh crore
Production growth over FY2024–25	15.6%
Production growth over FY2020–21	110%
Defence exports, FY2025–26	₹38,424 crore
Export growth	62.66% YoY
Export destinations	80+ countries
Private-sector share of production	~24%
Defence export target, 2029	₹50,000 crore
Defence production target, 2029	₹3 lakh crore

The next stage is being shaped by a combination of domestic demand, indigenous technology, industrial scale and international market access. Government targets announced in 2026 envisage defence production reaching ₹3 lakh crore and exports ₹50,000 crore by 2029.

From Defence Market to Manufacturing Hub

India remains one of the world's largest defence markets, creating a substantial domestic demand base for Indian manufacturers. At the same time, procurement reforms have increasingly connected this demand with domestic industrial capability. The Government's domestic procurement policies, Positive Indigenisation Lists, Srijan portal, iDEX and Make framework have created pathways linking military requirements with Indian manufacturers and technology developers. More than 15,700 defence items have been indigenised, while five Positive Indigenisation Lists covering 5,012 DPSU items had been notified by May 2026.

This domestic scale is important for global competitiveness because major aerospace and defence manufacturers generally require a substantial home market to support investment in production infrastructure, engineering, certification and supply chains.

The Export Transition

The most visible indicator of India's changing position is the expansion of defence exports.

FY	Defence Exports
2013–14	₹686 crore
2020–21	₹8,434 crore
2022–23	₹15,920 crore
2023–24	₹21,083 crore
2024–25	₹23,622 crore
2025–26	₹38,424 crore

Between FY2013–14 and FY2025–26, exports increased by more than 56 times. In FY2025–26, the private sector contributed ₹17,353 crore and DPSUs ₹21,071 crore to exports.

The export basket is also expanding beyond traditional platforms into missiles, artillery systems, ammunition, radars, electronic systems, naval equipment, unmanned systems, protective equipment, components and aerospace products. Recent export developments involving systems such as BrahMos and Astra further indicate the increasing international reach of Indian-developed defence technologies.

Building Global-Scale Companies

Global leadership requires companies capable of competing beyond the domestic procurement cycle. India's established defence enterprises – including HAL, BEL, BDL, L&T, Tata Advanced Systems, Bharat Forge, Mahindra Defence and other private manufacturers – are increasingly participating across platforms, subsystems, electronics, precision engineering and aerospace manufacturing.

The development of private-sector manufacturing capacity is particularly visible in aerospace. The Tata-Airbus C-295 programme has established a private-sector military-aircraft Final Assembly Line in India, while the Tejas programme is expanding indigenous fighter production capacity. AMCA represents the next major test of India's ability to create a domestic ecosystem around a sophisticated combat-aircraft programme.

The recent expansion of L&T's unmanned-systems business illustrates another emerging direction. The company expects its Precision Engineering and Systems division – which includes drones and UAS – to triple revenue over the next five years, while expanding production and international operations.

Technology Will Determine the Next Phase

Global defence manufacturing is increasingly moving towards AI, autonomous systems, electronic warfare, advanced sensors, semiconductors, space systems, quantum technologies, hypersonics, advanced materials and software-defined platforms.

India's ability to compete internationally will therefore depend increasingly on technology depth rather than manufacturing volume alone. The country's defence R&D ecosystem is expanding through DRDO, iDEX, TDF, ADITI, academia and private-sector laboratories. In July 2026, the Government stated that 676 startups and innovators had been engaged through iDEX and 551 contracts signed, while procurement worth more than ₹2,400 crore from startups and MSMEs had been approved.

The recent development of an indigenous expendable turbojet engine by DRDO's GTRE in collaboration with Azad Engineering also illustrates the movement into deeper technology layers such as propulsion, where India has historically faced significant dependence on foreign technology.

Global Supply Chains and Strategic Partnerships

Global leadership will also depend upon India's position within international aerospace and defence supply chains. The emerging model is not one of complete industrial isolation. International partnerships are increasingly being combined with domestic production, technology absorption and supplier development.

The current global environment creates an additional opportunity. European rearmament, diversification of defence suppliers and the restructuring of global supply chains are increasing demand for additional manufacturing capacity. Indian companies entering international supply chains can therefore participate not only as suppliers to the Indian Armed Forces but also as global Tier-1, Tier-2 and specialist technology suppliers.

The Road to 2047

India's path to global leadership can be represented through a progression:

Import Dependence

↓

Domestic Production

↓

Indigenous Design & Development

↓

Industrial Scale

↓

Technology Ownership

↓

Global Supply-Chain Integration

↓

Defence Exports

↓

Global Defence Manufacturing Hub

The available indicators show that several components of this transition are already underway: production has reached record levels, exports are expanding rapidly, private-sector participation is increasing, indigenous items are replacing imports and startups are entering defence technology development.

The next stage of India's defence-industrial evolution will therefore be measured increasingly by its position in the global value chain – the number of Indian-designed systems entering foreign inventories, the depth of Indian suppliers within international programmes, the technologies developed domestically and the ability of Indian manufacturers to provide products and lifecycle support in overseas markets.

India's emerging trajectory is consequently moving beyond "Make in India" as a domestic manufacturing programme towards "Make for the World" as an export and global-supply-chain strategy.

Challenges That Still Need Resolution

India's defence and aerospace manufacturing base has expanded significantly, but the transition from a large domestic producer to a globally competitive defence-industrial power remains constrained by several structural challenges. The latest data show that defence production reached ₹1.78 lakh crore in FY2025–26, while exports reached ₹38,424 crore. Yet India's share of global major-arms exports remains small: PRS, citing SIPRI data, noted that India accounted for only 0.2% of global arms-export volume during 2016–23. The challenge, therefore, is increasingly one of technology depth, production scale, industrial efficiency and global competitiveness, rather than simply increasing the number of defence manufacturers.

1. Indigenous Propulsion Remains a Major Aerospace Challenge

The deepest technological challenge in Indian aerospace remains propulsion. India's experience with the Kaveri engine illustrates the difficulty of developing high-performance military turbofans. A CAG performance audit found that the Kaveri engine did not meet the LCA's required specifications: the engine weighed 1,235 kg against the 1,100 kg requirement, while achieved thrust was 70 kN against the required 81 kN, despite extensions to the programme schedule and an approved cost increase to ₹2,839 crore.

The issue extends beyond fighter engines. Indigenous capability in turbines, hot-section materials, single-crystal components, high-temperature coatings, advanced compressors and combustion systems remains strategically important for combat aircraft, helicopters, cruise missiles and advanced unmanned systems.

The Shakti helicopter-engine programme also experienced delays; CAG reported that certification of the engine was delayed by 46 months following redesign after it failed to meet operational requirements in high- and low-temperature conditions.

2. R&D Needs Greater Speed and Translation into Production

India has expanded defence R&D support, but the conversion of research into operational systems remains a challenge. PRS, citing CAG and parliamentary committee findings, reported that of 178 DRDO projects examined by CAG, 119 did not adhere to their original timelines, while in 49 projects the additional time exceeded the original project schedule.

The share of defence expenditure allocated to R&D has also fluctuated. According to PRS, R&D accounted for 4.7% of the defence budget in 2014–15, fell to 3.2% in 2020–21, and was estimated at 3.9% in 2025–26.

The issue is therefore not simply the quantum of R&D funding. It includes project definition, technology maturity, testing, user requirements, programme management and transition from laboratory technology to production.

3. Aerospace Programmes Continue to Face Long Development Cycles

India's aerospace programmes demonstrate both technological progress and the difficulty of reaching production maturity. Earlier CAG assessments of the LCA programme identified delays in the development of

critical subsystems including the multimode radar, flight-control system and digital engine-control system, alongside delays in establishing production infrastructure.

The implication for future programmes such as AMCA is significant. Fifth-generation aircraft development involves simultaneous maturity in stealth materials, sensors, mission computers, electronic warfare, propulsion, flight controls, weapons integration and certification. Delays in one technology layer can consequently affect the entire platform programme.

4. The Supply Chain Still Has Critical Import Dependencies

India's growing domestic production does not mean complete localisation of the technology stack. The drone sector illustrates this clearly. Recent reporting on India's armed-drone expansion has identified continued dependence on imported microchips and sensors, even as Indian manufacturers increase production of indigenous unmanned systems.

A similar challenge exists across aerospace and defence in semiconductors, specialised electronics, propulsion components, advanced materials, machine tools, sensors and certain precision components.

This creates a distinction between platform-level indigenisation and technology-level indigenisation.

5. MSME Integration and Scale Remain Uneven

India has developed a large defence MSME base, but participation does not automatically translate into scalable industrial capability. Recent assessments have identified challenges including access to finance, certification infrastructure, procurement implementation and integration into major OEM supply chains.

For aerospace manufacturing, the challenge is particularly demanding because suppliers must meet stringent requirements for traceability, quality assurance, certification, repeatability and long-term production consistency.

The critical transition for MSMEs is therefore from being occasional vendors to becoming qualified Tier-1, Tier-2 and specialist global aerospace suppliers.

6. Production Capacity Must Match Procurement Demand

India's defence industry has expanded production, but aerospace manufacturing remains particularly sensitive to production bottlenecks. In 2025, a parliamentary defence panel recommended greater private-sector participation in fighter production amid concerns over India's fighter squadron strength and delays in aircraft deliveries. Reuters reported that HAL's production was affected by supply-chain issues, while private-sector participation was being examined as a means of expanding manufacturing capacity.

This highlights an important industrial issue: having a successful aircraft design is different from having the capacity to manufacture that aircraft rapidly and consistently.

Future manufacturing programmes will therefore require not only production lines but also deeper supplier capacity, tooling, testing, certification and inventory planning.

7. Private-Sector R&D Remains Below Potential

India's broader industrial R&D structure presents another limitation. The Economic Survey 2024–25 notes that India's industrial R&D expenditure remains low and concentrated, while historically Indian R&D has placed greater emphasis on basic research than applied research. It specifically identifies the need for stronger industry–academia collaboration, private-sector participation and applied research.

This matters for defence because technologies such as AI, quantum systems, advanced materials, semiconductors, propulsion and autonomy increasingly require sustained collaboration between universities, laboratories and industrial manufacturers.

8. Global Competitiveness Is Still Developing

India's defence exports have risen rapidly, but international market penetration remains comparatively limited. PRS notes that India accounted for only 0.2% of global arms-export volume during 2016–23, compared with 39% for the United States, 15% for Russia and 9% for France.

Indian manufacturers therefore face competition not only on price but also on technology, reliability, delivery schedules, financing, after-sales support, certification and political relationships.

The challenge is particularly relevant for DPSUs. Parliamentary analysis has identified international price competition, rapid technological change and supply-chain disruptions caused by geopolitical events among the challenges faced by Indian defence exporters.

9. Testing, Certification and User Acceptance

Another recurring issue is the distance between prototype development and military induction. CAG's earlier review of DRDO projects found that among 19 completed staff projects examined at R&DE(E), only three entered production, two partially achieved requirements and the remainder were not accepted by users. CAG attributed failures in several cases to factors including inadequately defined requirements and project delays.

For advanced aerospace systems, testing and certification are particularly demanding. India therefore needs extensive access to wind tunnels, engine test facilities, environmental testing, electromagnetic compatibility facilities, flight-test infrastructure, materials laboratories and certification agencies.

10. The Central Challenge: Moving from Indigenous Production to Technology Depth

India's defence manufacturing achievements demonstrate that the country can increasingly design, manufacture and export military equipment. The unresolved challenges lie deeper in the value chain.

Challenge	Industrial Implication
Aero-engine technology	Limits complete aerospace sovereignty
Long R&D cycles	Delays operationalisation and production
Critical component imports	Creates supply-chain vulnerabilities
MSME financing & certification	Limits supplier scalability
Production bottlenecks	Restricts rapid platform induction
Private R&D intensity	Limits industrial technology creation
Testing infrastructure	Extends development-to-induction timelines
Global competitiveness	Limits export-market penetration
Technology absorption	Risks dependence beneath domestic assembly
Lifecycle support	Determines long-term export credibility

The evidence from CAG, parliamentary analysis, government programmes and industry developments indicates that India's defence-industrial challenge has consequently moved into a more advanced phase. The country has built scale, but the next layer concerns technology depth, manufacturing precision, programme execution, supply-chain resilience and international competitiveness.

For aerospace in particular, the unresolved gap remains most visible in the technologies at the deepest end of the value chain – propulsion, advanced materials, sensors, semiconductors, electronic warfare and high-end systems integration. For defence manufacturing more broadly, the challenge is to convert India's expanding network of DPSUs, private companies, MSMEs, startups and research institutions into a consistently scalable industrial system.

The trajectory is therefore no longer defined primarily by whether India can manufacture defence equipment. The central industrial question has become how quickly and consistently India can convert indigenous technology into production-scale systems that meet military requirements and compete in international markets.

India's Defence-Industrial Roadmap: Global Benchmarking, Economic Impact and Strategic Priorities

India's aerospace and defence manufacturing transformation has reached a stage where the strategic debate must move beyond the question of whether the country can manufacture defence equipment. The evidence of the past decade shows a substantial expansion in domestic production, exports, private-sector participation and innovation. The more consequential question is whether this momentum can be converted into technology ownership, industrial depth and sustained global competitiveness by 2035 and, ultimately, into a mature defence-industrial power by 2047.

This chapter therefore examines India's position against the global defence-industrial landscape, the wider economic impact of defence manufacturing, the financing and technology gaps that remain, and the measurable milestones required for the next phase of industrial development.

India's Position in a Rapidly Expanding Global Industry

The global environment against which India must benchmark itself has changed sharply. SIPRI estimates that the arms revenues of the world's 100 largest arms-producing and military-services companies reached a record USD 679 billion in 2024, up 5.9% in real terms from 2023 and 26% higher than in 2015. US-based companies accounted for USD 334 billion, while European companies generated USD 151 billion. The three Indian companies included in the SIPRI Top 100 generated a combined USD 7.5 billion, an increase of 8.2% over 2023.

This comparison illustrates India's position with considerable clarity. India has created a rapidly expanding domestic production base, but the largest global defence-industrial powers possess a much deeper concentration of prime contractors, privately funded R&D, specialised suppliers and export-oriented product portfolios. The next phase of India's strategy must therefore focus not only on increasing the value of production, but on expanding its position within the global technology and industrial hierarchy.

India's export momentum is substantial: defence exports reached ₹38,424 crore in FY2025–26, a 62.66% increase over the previous year. However, SIPRI's latest arms-transfer data show that the international market remains dominated by established suppliers. The United States accounted for 42% of global major-arms exports in 2021–25, while the volume of global major-arms transfers increased by 9.2% compared with 2016–20.

The benchmarking challenge is therefore not simply numerical. India's defence exports are measured in national export-value data, while SIPRI's arms-transfer indicators measure the volume of major conventional arms transfers; the two datasets should not be treated as directly interchangeable. Nevertheless, both show the same strategic reality: India is moving rapidly upward as a manufacturer and exporter, but has considerable ground to cover before it matches the market presence of the established global suppliers.

Benchmarking India: Production, Exports, R&D and Technology Capability

A credible 2035 roadmap requires India to benchmark itself against the industrial characteristics of the world's leading defence powers rather than against procurement expenditure alone. The United States, Europe, South

Korea and Israel illustrate different but relevant models: large prime contractors supported by deep supplier networks, substantial private-sector R&D, strong government demand, specialised technology ecosystems and export-oriented product strategies.

India's production trajectory is now substantial. Defence production reached ₹1.78 lakh crore in FY2025–26, up 15.6% from ₹1.54 lakh crore in FY2024–25 and 110% higher than FY2020–21. The private sector contributed approximately ₹42,000 crore, or 24% of total output, compared with 22% in FY2024–25.

Yet the global comparison shows the difference between a growing national production base and a mature defence-industrial system. The 39 US companies in the SIPRI Top 100 generated USD 334 billion in arms revenues in 2024. European companies in the Top 100 generated USD 151 billion, while the three Indian companies in the ranking generated USD 7.5 billion. SIPRI also recorded a 36% increase in the combined arms revenues of German companies and continued expansion of industrial capacity in response to new orders.

India's challenge is therefore not to replicate any one country's industrial model. The United States operates around global prime contractors and a large defence R&D ecosystem; South Korea has combined domestic demand with aggressive export financing and industrial coordination; Israel has concentrated on high-value technologies such as air defence, sensors, UAVs and electronic systems. India's advantage lies in its large domestic market, expanding engineering workforce, broad industrial base and growing digital and space capabilities. Its strategic task is to convert these advantages into a deeper defence technology and manufacturing ecosystem.

Table 1: India in the Global Defence-Industrial Context

Indicator	India	Global Benchmark
Defence production	₹1.78 lakh crore, FY2025–26	SIPRI Top 100: USD 679 bn arms revenue in 2024
Annual production growth	15.6% in FY2025–26	Top 100 revenue growth: 5.9% in real terms
Defence exports	₹38,424 crore, FY2025–26	US: 42% share of global major-arms exports, 2021–25
Indian companies in SIPRI Top 100	3 companies	US: 39 companies; Europe: 26 companies
Combined arms revenue of Indian Top 100 companies	USD 7.5 bn	US Top 100 companies: USD 334 bn
Major technology challenge	Critical technology depth	Mature ecosystems across propulsion, sensors, electronics and advanced systems

Note: India's defence-production and export figures are national accounting measures, while SIPRI arms-revenue and arms-transfer data use different methodologies. They are useful for strategic benchmarking but should not be treated as directly equivalent.

Defence Manufacturing as an Economic and Regional Growth Engine

The economic significance of defence manufacturing extends beyond the value of equipment delivered to the armed forces. A defence programme creates demand across metallurgy, electronics, machine tools, software, composites, precision engineering, testing, logistics and maintenance. A fighter aircraft, missile or naval platform therefore represents a network of industrial relationships rather than a single production line.

India's ecosystem now includes nearly 16,000 MSMEs participating in areas ranging from drones and avionics to components and specialised manufacturing. The Ministry of Defence has also highlighted 15 Defence Industry-Academia Centres of Excellence and a ₹500 crore Technology Development Fund corpus for deep-tech and cutting-edge projects.

The two Defence Industrial Corridors are intended to provide the geographical foundation for this ecosystem. By April 2026, the Uttar Pradesh Defence Industrial Corridor had recorded investment commitments of ₹42,057 crore, with ₹4,409 crore in grounded investment. Tamil Nadu had attracted commitments of ₹32,699 crore, with ₹6,446 crore in actual investment. Together, the corridors are increasingly important instruments for linking manufacturing investment with regional supply chains, testing infrastructure, skills and employment.

The economic challenge is to ensure that these corridors do not become collections of isolated factories. Their strategic value will depend on whether they develop complete industrial networks:

Anchor manufacturer → Tier-1 supplier → Tier-2 supplier → MSME → R&D institution → testing facility → skilled workforce → logistics and export infrastructure.

Foreign investment can also contribute to this process. India permits up to 74% FDI through the automatic route for companies seeking new defence industrial licences, while investment beyond that level and up to 100% can be permitted through the government route where it provides access to modern technology. Official data reported ₹5,077 crore of defence-sector FDI by February 2024.

The policy question for the next decade is therefore not simply how much FDI enters the sector, but what industrial capability accompanies it: design centres, supplier development, local engineering, technology transfer, maintenance and lifecycle support.

Financing the Next Generation of Defence Manufacturing

One of the most persistent constraints in aerospace and defence manufacturing is the mismatch between technology-development timelines and conventional financing cycles. A deep-tech company may require years of engineering, prototyping, testing and certification before receiving its first major production order. MSMEs can simultaneously face large working-capital requirements after winning an order because production requires upfront investment in materials, tooling and specialised equipment.

The Government's ₹1 lakh crore Research, Development and Innovation Scheme, approved in July 2025, represents a potentially important addition to India's financing architecture. The scheme is designed to catalyse private-sector investment through long-tenor, low- or nil-interest financing, equity support and deep-tech funds, with financing available for transformative projects at higher technology-readiness levels.

The scheme should be viewed alongside existing defence mechanisms. The Technology Development Fund had sanctioned 81 projects involving commitments of ₹344 crore, according to PRS's 2026 analysis, while DRDO had signed 1,918 licensing agreements for technology transfer to Indian industry.

However, India's financing architecture must address the entire industrial cycle:

Research → Prototype → Testing → Certification → Initial production → Scale manufacturing → Export.

Different stages require different capital. Grants and government support may be appropriate for early research; equity and patient capital for technology development; long-term debt for production facilities; working capital for MSMEs; and export credit or buyer financing for international sales.

This is particularly relevant because global defence exporters do not compete only through the technical characteristics of their products. They also provide financing, training, spares, maintenance and lifecycle support. India's export strategy must therefore develop alongside financial mechanisms capable of supporting long-duration defence contracts.

Critical Technologies: From Broad Priorities to Measurable Milestones

The 2035 roadmap should identify technologies where India requires measurable capability rather than general commitments to indigenisation. Five technology groups require particular strategic attention.

- **Semiconductors and Defence Electronics-** Modern defence systems depend on processors, RF electronics, sensors, power electronics and secure communications. India's semiconductor programme has begun building domestic manufacturing capacity. Government material for SEMICON India 2025 reported 10 approved semiconductor projects across six states, representing around ₹1.60 lakh crore in investment. These include fabrication, assembly, testing, packaging and silicon-carbide projects.

For defence manufacturing, the next requirement is to connect this civilian-industrial foundation with military needs: secure electronics, RF devices, radiation-resistant components where required, specialised packaging, power semiconductors and trusted supply chains.

- **Sensors, Seekers and Electronic Systems-** Sensors are among the highest-value technologies in modern weapons. India has established capabilities in radars, sonar and several missile and electronic systems, but the next industrial milestone should focus on deeper domestic capability in RF components, electro-optics, infrared sensors, seekers, signal processing and electronic warfare.

The measurement of progress should move from the number of indigenous platforms to the proportion of critical sensor and electronics subsystems designed, manufactured and supported within India.

- **Advanced Materials-** Aerospace and strategic systems depend upon composites, titanium alloys, specialised steels, ceramics, superalloys and high-temperature materials. These materials determine the performance of aircraft structures, missile systems, engines, armour and naval platforms.

The milestone should therefore be structured around the complete value chain:

Material research → qualification → pilot production → aerospace certification → serial production → export qualification.

- **Propulsion-** Propulsion remains among the most difficult areas of aerospace technology. India's future aircraft, helicopters, missiles and unmanned systems will require sustained capability in turbines, compressors, combustion systems, hot-section materials and high-temperature manufacturing. The appropriate measure is not a single programme announcement, but the progressive localisation of subsystems, materials, manufacturing processes and intellectual property.
- **A Measurable Roadmap to 2035 and 2047-** The Government has already established targets of ₹3 lakh crore in defence production and ₹50,000 crore in defence exports by 2029. These provide an immediate industrial baseline for the longer-term roadmap.

Table 2: Proposed Implementation Roadmap

Period	Strategic Priority	Suggested Measurable Outcome
2026–2029	Scale domestic manufacturing	Achieve government targets of ₹3 lakh crore production and ₹50,000 crore exports
2026–2030	Deepen supply chains	Increase domestic production of critical components and expand Tier-1/Tier-2 supplier networks
2026–2030	Finance innovation	Operationalise RDI, TDF and deep-tech financing across prototype-to-production stages
2030–2035	Master priority technologies	Demonstrate production capability in selected semiconductor, sensor, materials and propulsion technologies
2030–2035	Global integration	Increase Indian participation in global OEM supply chains and expand lifecycle-support capabilities
2035–2040	Technology and export scale	Expand exports of Indian-designed platforms, subsystems and advanced technologies
2040–2047	Mature industrial leadership	Build globally competitive companies with technology ownership, large-scale production and sustained export presence

These milestones should be accompanied by an accountability architecture. Every major strategic technology programme should identify a lead institution, industrial partners, technology-readiness level, target date, funding mechanism, test milestone and production objective.

The need for this discipline is evident from the experience of defence R&D. A CAG review of 178 DRDO projects found that 119 failed to meet their original timelines, while in 49 cases the delay exceeded the original project duration. The Standing Committee on Defence has similarly identified delays and cost escalation as recurring concerns.

The next generation of programmes will therefore require continuous programme review linking technology development, user requirements, manufacturing readiness and supplier capacity.

Proposed 2035 Scorecard

India's progress should be assessed through a public industrial scorecard rather than production value alone.

Strategic Metric	What It Measures
Defence production	Manufacturing scale
Defence exports	International competitiveness
Private-sector share	Industrial diversification
Indian-owned IP	Technology ownership
Critical components localised	Supply-chain resilience
Private R&D investment	Innovation depth
Technology-to-production conversion	Programme effectiveness
Tier-2 and Tier-3 supplier growth	Industrial depth

Strategic Metric	What It Measures
High-skilled employment	Economic impact
FDI with technology transfer	Quality of foreign investment
Global OEM contracts	International supply-chain integration
Export lifecycle support	Long-term market credibility

Strategic Priorities

India's defence-industrial roadmap should therefore operate through five interconnected priorities.

- **Benchmark globally-** India should measure itself not only against its own previous production records but against the industrial characteristics of leading aerospace and defence economies.
- **Connect defence manufacturing with economic development-** Production targets should be linked with MSME participation, high-skilled employment, regional clusters, supplier development, FDI and global value-chain integration.
- **Finance the entire innovation cycle-** Deep-tech programmes cannot depend solely on prototype grants. India requires patient capital for R&D, working capital for manufacturing and export finance for international expansion.
- **Concentrate resources on critical technologies-** Semiconductors, sensors, advanced materials, propulsion, AI, autonomy and electronic systems should be managed through measurable technology roadmaps.
- **Institutionalize accountability-** Every strategic programme should be assessed against timelines, technology milestones, industrial participation and production readiness.

India has already moved beyond the industrial structure that existed a decade ago. Defence production has reached ₹1.78 lakh crore, exports have risen to ₹38,424 crore, the private sector accounts for nearly a quarter of production, and the industrial ecosystem now extends across thousands of MSMEs, startups, research institutions and manufacturing companies.

The next phase, however, will be determined by the depth of that ecosystem. The strategic transition is from manufacturing platforms to mastering the technologies beneath them; from isolated domestic production to multi-tier industrial supply chains; from government-supported innovation to sustained private R&D; and from exporting products to providing complete, globally competitive defence solutions.

By 2035, India's progress should therefore be visible not only in a larger production number. It should be reflected in Indian-designed technologies entering international markets, domestic companies supplying global aerospace and defence programmes, critical electronic and material systems being produced within India, stronger regional manufacturing clusters and a financial ecosystem capable of carrying innovation from laboratory to export market.

That is the central test of India's defence-industrial roadmap: to convert manufacturing momentum into technology ownership, industrial resilience and sustained global competitiveness – and, by 2047, to establish India's aerospace and defence ecosystem as an integral part of the global industrial order.

Recommendations

India's defence and aerospace manufacturing base has expanded rapidly, with defence production reaching ₹1.78 lakh crore in FY2025–26 and exports reaching ₹38,424 crore, while the industrial ecosystem now includes around 17,000 MSMEs, 16 DPSUs and approximately 500 licensed defence companies. The next phase therefore requires a shift from expanding participation to deepening technological capability, manufacturing scale and global competitiveness.

The following recommendations are framed around the challenges identified in India's defence-industrial development and the direction already visible in DAP 2026, the Economic Survey and current government programmes.

1. Move from Indigenisation to Technology Ownership

India's indigenisation programmes have significantly expanded domestic production, with more than 15,700 defence items reportedly indigenised through the Srijan ecosystem and five Positive Indigenisation Lists covering 5,012 DPSU items.

The next stage is deeper localisation of the technologies underneath major platforms.

Current Focus	Next-Generation Focus
Indigenous platform	Indigenous technology stack
Indian assembly	Indian components and subsystems
Indigenous content	Indian IP ownership
Import substitution	Technology substitution
Manufacturing capability	Design + manufacturing capability

Particular attention needs to remain on aero-engines, semiconductor devices, seekers, sensors, electronic warfare, propulsion, advanced materials, power electronics and specialised manufacturing equipment.

The objective is to progressively move from “manufactured in India” to “designed and technologically controlled in India.”

2. Establish Mission-Based Programmes for Critical Technologies

India's defence R&D system could increasingly be organised around mission-mode technology programmes rather than isolated laboratory projects.

Priority areas include:

- Aero-engine technology
- Hypersonic propulsion
- Advanced radar and RF systems
- Electronic warfare
- Semiconductor and photonic devices

- Quantum sensing and communications
- Autonomous systems
- Directed-energy systems
- Advanced materials
- Underwater technologies
- Space-based defence systems
- Secure communications
- Advanced batteries and power systems

This direction is consistent with the Government's current emphasis on emerging technologies and with DAP 2026's proposed focus on indigenous design, IPR retention and technology-driven procurement.

3. Make Industry a Co-Developer, Not Only a Production Agency

DRDO has already established the Development-cum-Production Partner/Production Agency model, under which private companies can participate in development and subsequent manufacturing. DRDO also reports a technology pool involving around 2,000 industries.

This model can be expanded for major programmes.

A future development structure could increasingly follow:

DRDO / Academia

↓

Technology Development

↓

Private + DPSU Development Partner

↓

Prototype & Testing

↓

Production Partner

↓

Indian Supply Chain

↓

Export

This would reduce the separation between technology development and production.

4. Strengthen the “Valley of Death” Between Prototype and Production

One of the recurring challenges in defence innovation is the transition from a successful prototype to a deployable product.

India's iDEX ecosystem has already created a substantial innovation pipeline. By March 2026, 676 startups, MSMEs and innovators had entered the iDEX ecosystem, while 58 prototypes worth ₹3,853 crore had received procurement clearance and 45 procurement contracts worth ₹2,326 crore had been signed.

The next requirement is greater emphasis on:

Prototype → User trials → Certification → Limited production → First order → Scale production → Export

Procurement pathways need to remain sufficiently predictable for companies to justify investment in production tooling, certification and inventory.

5. Build Global-Scale Aerospace Supply Chains

India's large MSME base provides industrial depth, but aerospace requires exceptionally high standards of quality, traceability, certification, process control and repeatability.

Aerospace manufacturing policy should therefore encourage MSMEs to progress from:

Local vendor → Tier-3 → Tier-2 → Tier-1 → Global supplier

The objective would be to increase Indian participation in international aerospace programmes not only through final assembly but through engines, avionics, structures, landing systems, electrical systems, composites and precision components.

This is particularly relevant as global aerospace manufacturers diversify supply chains.

6. Treat Defence Industrial Clusters as Complete Ecosystems

The Economic Survey 2026 argues for treating industrial clusters rather than standalone firms as the unit of competition, integrating anchor companies, MSMEs, suppliers, skills, logistics and R&D.

For India's Defence Industrial Corridors, this means developing clusters around complete industrial capabilities:

Prime OEM → Tier-1 → Tier-2 → MSMEs → Testing → Certification → R&D → Skills → Logistics

The UP and Tamil Nadu corridors should consequently evolve beyond investment destinations into specialised defence manufacturing ecosystems.

7. Create a Stronger Defence Manufacturing Finance Architecture

Advanced defence manufacturing requires high upfront capital for:

- tooling;
- specialised machinery;
- certification;
- testing;
- inventory;
- skilled manpower;
- R&D;
- production-line expansion.

The Government's ₹1 lakh crore RDI scheme provides a significant new financing mechanism for private-sector R&D.

A wider financing ecosystem involving long-term industrial finance, venture capital, strategic investment and export finance would be particularly relevant for deep-tech defence companies whose development cycles are longer than conventional technology businesses.

8. Make Production Scalability a Procurement Parameter

A defence system that can be produced only in small quantities presents a different industrial proposition from one that can be rapidly scaled.

Future procurement evaluations can increasingly consider:

- annual production capacity;
- surge-production capacity;
- domestic supplier depth;
- critical-component availability;
- manufacturing lead time;
- tooling readiness;
- lifecycle-support capacity;
- export scalability.

This is particularly important for drones, counter-UAS systems, ammunition, missiles and other systems that may experience very high wartime consumption rates.

The Government's current emphasis on scaling production in the draft DAP 2026 is consistent with this direction.

9. Develop Dual-Use Technology Corridors

The boundary between defence and civilian manufacturing is increasingly narrowing.

Technologies such as:

AI, robotics, semiconductors, advanced materials, drones, batteries, communications, space systems, additive manufacturing and autonomous vehicles

have both civilian and military applications.

India's manufacturing strategy can therefore use defence demand to accelerate technologies that subsequently generate commercial applications, while civilian industrial scale can simultaneously reduce the cost of defence technologies.

10. Make Exports an Integral Part of Product Development

India's defence exports have increased to ₹38,424 crore, growing 62.66% in FY2025–26, with products reaching more than 80 countries. The Government has set a target of ₹50,000 crore by 2029.

The next stage is to incorporate export requirements earlier in product development.

This includes:

international certification + modular configurations + competitive pricing + financing + training + spares + maintenance + upgrades.

Export competitiveness should therefore be considered during the design stage, rather than after induction into the Indian Armed Forces.

11. Build the Human Capital Behind Advanced Manufacturing

Future defence factories will require a workforce combining:

- aerospace engineering;
- semiconductor engineering;
- AI and machine learning;
- robotics;
- materials science;

- propulsion;
- systems engineering;
- cybersecurity;
- precision manufacturing;
- quality assurance;
- testing and certification.

The Defence Skilling Conclave in 2026 specifically highlighted the need to develop human capital for the defence, aerospace and strategic manufacturing sectors.

The requirement is therefore not simply for more engineers, but for engineers and technicians trained in defence-grade production environments.

12. Measure Defence Manufacturing by Industrial Depth

India's headline indicators – production, exports and indigenous content – are increasingly supplemented by more detailed measures.

A broader industrial-performance framework could track:

Metric	What It Measures
Indian IP generated	Technology ownership
Critical components localised	Supply-chain sovereignty
Tier-2/Tier-3 suppliers	Industrial depth
Production lead time	Manufacturing efficiency
Surge capacity	Wartime resilience
Private R&D expenditure	Technology creation
Export share of production	Global competitiveness
Lifecycle support capability	Long-term industrial sustainability
Global Tier-1 suppliers	International integration
Technology readiness-to-production conversion	R&D effectiveness

This would provide a more comprehensive picture of India's transition from manufacturing capacity to industrial capability.

Strategic Direction

The recommendations can ultimately be organised around six industrial priorities:

Technology Ownership

↓

Deep Supply Chains

↓

Scalable Manufacturing

↓

Advanced Skills & R&D

↓

Global Supply-Chain Integration

↓

Export Competitiveness

India's current trajectory already provides the industrial foundation: ₹1.78 lakh crore of defence production, ₹38,424 crore of exports, nearly 17,000 MSMEs, 676 iDEX participants and expanding private-sector participation.

The next phase is therefore about depth rather than simply scale – moving deeper into propulsion, electronics, semiconductors, advanced materials, sensors, software and other critical technologies while simultaneously building the supplier, skills, financing and testing infrastructure required to manufacture them at scale.

In this context, India's transition towards "Make for the World" will depend on the ability of its defence-industrial ecosystem to combine technology development, manufacturing scale, supply-chain resilience and international market access within a single industrial architecture.

Vision 2035

From Defence Manufacturing Capacity to Global Aerospace & Defence Leadership

The central question for India's aerospace and defence industry over the next decade is no longer whether the country can manufacture military equipment. India has already demonstrated that capability at increasing scale. The more consequential question is whether India can build the technology depth, industrial capacity, supply-chain resilience and global market presence required to become one of the world's leading aerospace and defence manufacturing powers by 2035.

The starting position is considerably stronger than it was a decade ago. India's defence production reached a record ₹1.78 lakh crore in FY2025–26, representing a 15.6% increase over FY2024–25 and a 110% increase over FY2020–21. Defence exports reached ₹38,424 crore, up 62.66% year-on-year, with Indian defence products reaching more than 80 countries. The Government has set a target of ₹3 lakh crore in defence production and ₹50,000 crore in defence exports by 2029.

The 2035 horizon therefore begins from an industrial base that is already substantially different from the one India possessed in 2014. The country now has a large network of DPSUs, private defence companies, MSMEs and startups, supported by procurement reforms, indigenisation programmes, Defence Industrial Corridors and innovation initiatives. The challenge for the next decade is to convert this expanding ecosystem into globally competitive industrial capability.

1. Technology Ownership Must Become the Core of the 2035 Industrial Model

The defining characteristic of a leading aerospace and defence power is not the ability to assemble sophisticated platforms, but the ability to control the technologies underneath them.

India's experience in combat aviation demonstrates the importance of this distinction. The country has developed the Tejas fighter and is progressing towards AMCA, but technologies such as aero-engines, advanced materials, sensors, semiconductors, electronic warfare systems, propulsion and high-end avionics remain among the most technologically demanding layers of aerospace manufacturing.

The Government's decision in 2025 to execute the AMCA programme through an industry-partnership model, allowing Indian companies from the public and private sectors to compete independently, as joint ventures or as consortia, represents an important change in the industrial architecture.

By 2035, programmes such as AMCA will therefore be measured not only by aircraft delivered, but by the industrial capabilities created around them – from stealth materials and flight-control systems to sensors, mission systems, propulsion components and precision manufacturing.

Recent developments already indicate movement into deeper aerospace technologies. In 2025, PTC Industries received technical acceptance for indigenous titanium components for AMCA and the Kaveri Derivative Engine, while also undertaking work on single-crystal turbine blades. A joint venture between PTC Industries and BDL was established to work on propulsion systems, guided bombs and small aero-engines for missiles, UAVs and loitering munitions.

These developments illustrate the direction in which the industrial base is moving: from platform manufacturing towards critical-component manufacturing.

2. Build the Supply Chain Beneath the Prime Contractor

A globally competitive aerospace and defence industry requires a much deeper industrial pyramid.

India's defence ecosystem now includes approximately 17,000 MSMEs, 16 DPSUs and around 500 licensed defence companies. Defence production has expanded rapidly, but the next stage requires these companies to move progressively into higher-value Tier-1 and Tier-2 aerospace and defence supply chains.

The 2035 industrial architecture should therefore encompass:

Prime OEMs → Tier-1 suppliers → Tier-2 manufacturers → MSMEs → specialist technology companies → materials and component suppliers.

The objective is visible in programmes such as the C-295 aircraft project, where international aerospace manufacturing is being connected with Indian supplier development. This model is strategically different from simply establishing a final assembly line because it creates opportunities in aerostructures, components, tooling, machining, electronics and aerospace-quality manufacturing.

The Economic Survey 2025–26 has also highlighted the importance of industrial clusters, industry-research linkages and coordinated technology development in strengthening India's manufacturing competitiveness.

3. Make Defence R&D Faster and More Industry-Driven

India's defence R&D architecture has expanded considerably through DRDO, iDEX, TDF, ADITI, universities and private-sector research. The next decade will require a stronger connection between laboratory technology and production lines.

The Economic Survey has identified a broader national challenge: private-sector R&D remains relatively low and concentrated, while stronger industry–research linkages and applied research are required to translate scientific capability into commercial and industrial outcomes.

For defence, the issue is particularly important because development cycles are long and technology becomes obsolete rapidly. By 2035, India's R&D system will increasingly need to operate around mission-oriented programmes in propulsion, AI, autonomous systems, quantum technologies, advanced materials, sensors, electronic warfare, semiconductors, space systems and hypersonics.

The emergence of iDEX has already changed the entry point for startups and MSMEs. The next phase is the movement from prototype to production and export.

4. Turn India into a Global Aerospace Supply-Chain Node

Global aerospace manufacturing is increasingly distributed across countries. India already possesses several attributes attractive to international aerospace companies: a large engineering workforce, an expanding manufacturing base, a substantial domestic market and growing capabilities in precision engineering and digital technologies.

Aero India 2025 explicitly positioned India as a destination for international OEM manufacturing partnerships, with the Government highlighting the participation of foreign OEMs alongside Indian public- and private-sector aerospace companies.

The 2035 objective should therefore be visible in India's position within global aerospace value chains.

Indian companies need to move beyond supplying low- and medium-value components towards high-value aerostructures, avionics, propulsion components, precision systems, software, electronics and maintenance, repair and overhaul capabilities.

The objective is not merely to attract foreign manufacturing into India, but to connect Indian companies to the global production networks of major aerospace and defence manufacturers.

5. Manufacturing Must Become Digital

The factory of 2035 will be fundamentally different from the factory of the previous generation.

Artificial intelligence, robotics, automation, additive manufacturing, digital twins, simulation, advanced materials and machine vision are increasingly becoming part of the defence manufacturing landscape.

For aerospace, digital engineering can shorten design cycles, while additive manufacturing can support complex components and rapid prototyping. AI-enabled inspection can improve quality control, while digital twins can support design, maintenance and lifecycle management.

India's broader industrial policy is increasingly moving towards this technology-intensive manufacturing model, while the Economic Survey has highlighted advanced manufacturing, technology adoption and stronger industry-research connections as important elements of India's industrial transition.

6. Semiconductors, Electronics and Advanced Materials Must Become Strategic Manufacturing Layers

The future defence platform will be increasingly dependent on electronics.

A modern fighter, missile, radar, drone or electronic-warfare system requires processors, RF electronics, sensors, power electronics, secure communications and advanced semiconductor devices.

India's semiconductor strategy therefore has direct implications for defence manufacturing. The development of domestic semiconductor manufacturing, packaging, materials and design capability will provide a wider industrial foundation for defence electronics.

The same applies to titanium alloys, composites, ceramics, high-temperature materials and specialised coatings. India's recent work on titanium castings and single-crystal turbine blades demonstrates the importance of developing these technologies domestically.

7. Production Scale Must Become a Strategic Capability

The next decade will also test India's ability to manufacture at speed and scale.

The experience of modern conflicts has demonstrated the importance of production capacity for missiles, ammunition, drones, electronic systems and other consumable military equipment. At the same time, high-end aerospace programmes require predictable production lines and reliable suppliers.

India's record production of ₹1.78 lakh crore provides evidence of rapidly increasing industrial output.

The 2035 industrial base will therefore need to combine:

high-end precision manufacturing + mass production capability.

That means the same ecosystem must be capable of manufacturing sophisticated fighter aircraft and radars while also scaling drones, ammunition, sensors and autonomous systems rapidly.

8. Defence Exports Must Become an Industrial Growth Engine

India's defence export trajectory has changed substantially. Exports increased from ₹686 crore in FY2013–14 to ₹38,424 crore in FY2025–26. The Government has established a target of ₹50,000 crore by 2029.

The international market itself is expanding. SIPRI recorded 9.2% growth in international transfers of major arms between 2016–20 and 2021–25, while European imports more than tripled. Global military expenditure reached USD 2.887 trillion in 2025, an increase of 2.9% in real terms.

This creates an expanding international market, but competition is intense. The United States, France, Germany, Russia, China, Israel, South Korea and Türkiye have established defence-export ecosystems with extensive financing, support and geopolitical networks.

India's 2035 export position will therefore depend upon more than competitive pricing. Indian systems will need international certification, dependable delivery, financing mechanisms, lifecycle support, training, upgrades and globally competitive supply chains.

The 2035 Industrial Architecture

India's path towards global leadership can be represented through six interconnected layers:

2035 Pillar	Industrial Objective
Technology	Indigenous critical technologies and IP
Manufacturing	High-volume and high-precision production
Supply Chains	Deep multi-tier domestic supplier networks
Innovation	Faster movement from R&D to production
Global Integration	Indian companies embedded in global value chains
Exports	Indian-designed systems competing internationally

The 2035 Test

The transition will not occur through a single flagship programme. It will emerge from the interaction of AMCA, Tejas, naval programmes, missiles, unmanned systems, space systems, semiconductor manufacturing, advanced materials, electronic warfare, propulsion programmes and thousands of supplier-level investments.

India's current industrial trajectory provides the foundation. Defence production reached ₹1.78 lakh crore in FY2025–26, while defence exports reached ₹38,424 crore, with products reaching more than 80 countries. The private sector contributed approximately 24% of defence production, demonstrating the expanding role of non-government industry in the manufacturing ecosystem.

By 2035, India's position as a global aerospace and defence manufacturing power will be visible through several measurable outcomes: Indian-designed platforms entering foreign inventories; Indian companies supplying global OEMs; critical propulsion and electronics technologies being developed domestically; deeper Tier-2 and Tier-3 supply chains; globally competitive private and public-sector manufacturers; and a defence export industry capable of providing products as well as long-term lifecycle support.

The international environment is simultaneously creating a larger market. Global military expenditure reached a record USD 2.887 trillion in 2025, while international transfers of major arms increased by 9.2% between 2016–20 and 2021–25. European arms imports increased by 210% over the same comparison period.

India therefore enters the 2030s with both industrial momentum and an expanding global market opportunity.

As Chanakya observed:

“In the happiness of his subjects lies his happiness; in their welfare his welfare.”

For the modern defence-industrial state, the principle extends beyond the welfare of citizens to the strength of the institutions, industries, scientific capabilities and economic foundations that sustain national power. A technologically capable industrial base provides employment, develops skilled manpower, creates intellectual property, strengthens strategic autonomy and connects national economic capacity with defence preparedness.

The strategic trajectory for the coming decade can therefore be expressed as:

From manufacturing platforms to mastering technologies; from domestic suppliers to global supply chains; from government-led production to a competitive industrial ecosystem; and from exporting equipment to becoming a global aerospace and defence manufacturing partner.

The objective by 2035 is consequently not simply to increase the value of defence production. It is to establish an industrial architecture in which design, technology, manufacturing, supply chains, testing, certification, financing, lifecycle support and exports operate as interconnected capabilities.

India's success will ultimately be measured by the depth of this ecosystem: how much critical technology is developed domestically, how many Indian companies participate in global aerospace and defence programmes, how rapidly production can be scaled, and how consistently Indian-designed systems can compete in international markets.

Vision 2035

India's transformation from a major defence market into a globally integrated aerospace and defence manufacturing power will depend on its ability to convert technological ambition into industrial scale.

The decade ahead is therefore about moving:

From Importer → Manufacturer → Designer → Technology Owner → Global Supplier → Global Defence Manufacturing Power.

And this is where the broader strategic significance of India's manufacturing journey lies: a nation that builds its own technologies, industrial capacity and global supply chains does not merely manufacture defence equipment – it builds the industrial foundations of national power.

Notes

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