

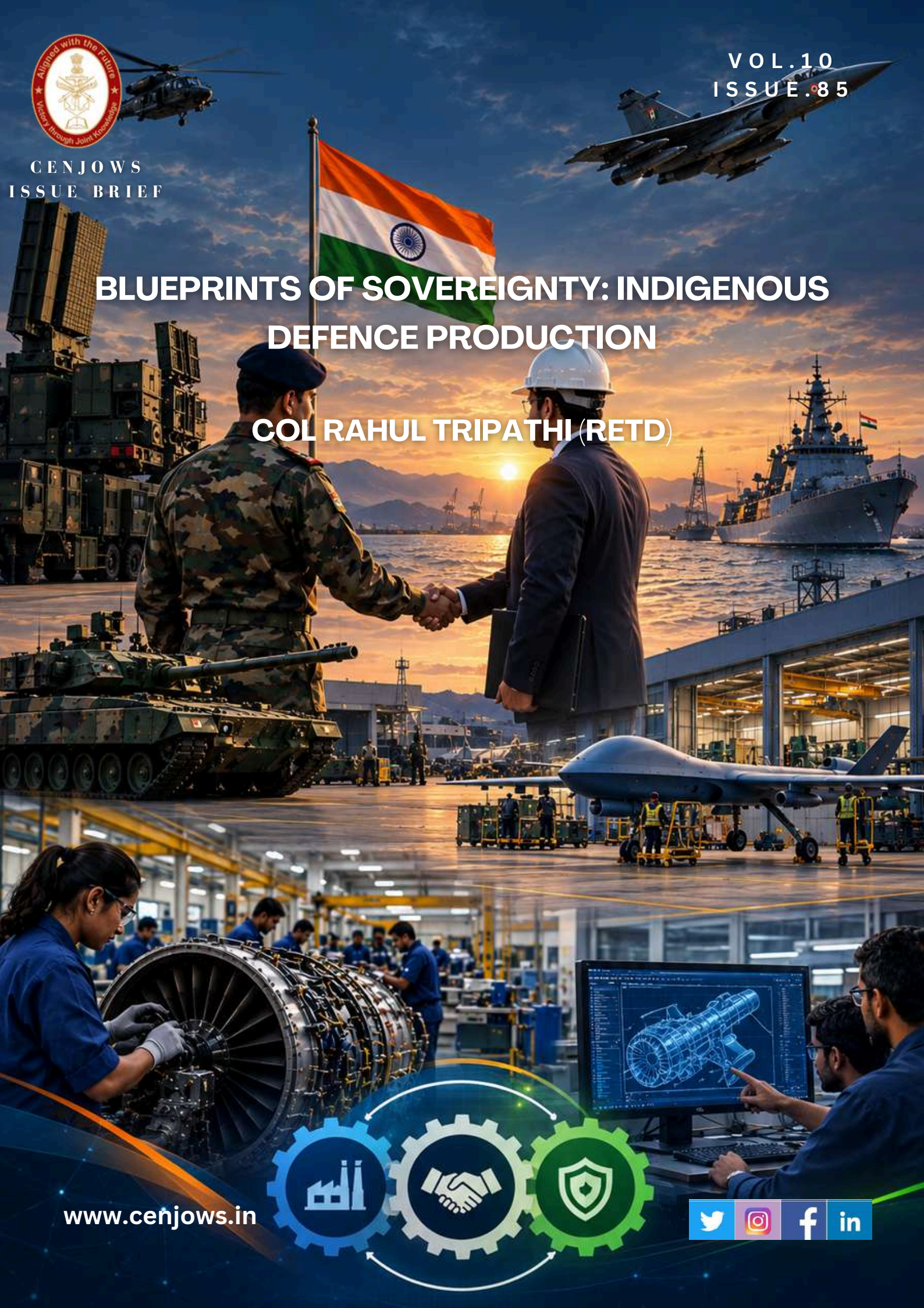


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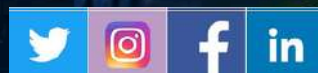
CENJOWS
ISSUE BRIEF

BLUEPRINTS OF SOVEREIGNTY: INDIGENOUS DEFENCE PRODUCTION

COL RAHUL TRIPATHI (RETD)



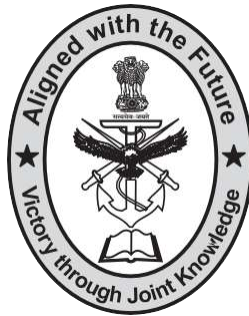
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ABOUT US

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BLUEPRINTS OF SOVEREIGNTY: INDIGENOUS DEFENCE PRODUCTION

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CENTRE FOR JOINT WARFARE STUDIES



CENJOWS

**Blueprints of Sovereignty:
Indigenous Defence
Production**



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Introduction

Till the time India does not make every nut bolt, sensor, Line Replaceable Unit (LRU), land, sea and platform on its own, the dream of being Strategically Autonomous will remain a dream. We will continue to remain aligned and, in a way, dependent on those countries that play the geopolitical shots today. This must have been the thought in the minds of those who brought about changes in the way we perceived and practiced defence production in 2018. The Covid epidemic and subsequent conflicts in the world helped the decision to change policy and look towards our private industry to make India vie towards self-reliance, “Aatmanirbharta”. This article will try to bring out the journey from 2018 till now.

The Strategic Mirage of Subservient Defence. Platform possession without supply chain sovereignty – this is what the Indian Armed Forces were before certain decisions were taken in 2018. It was like owning a sword but being dependent on someone else to sharpen it for you for battles which could not be predicted when they would start. Imagine an aircraft that makes up 50% of your total fighter fleet. Now imagine that

some replaceable maintenance items are critical for daily flights, and these are controlled by the Original Equipment Manufacturer (OEM) in a foreign country. If an episode like Covid happens, these supply chains get throttled due to slow or non-movement of freight from the OEM country to your own, or a conflict takes place where the OEM now has to support his own armed forces rather than yours. Denying this replaceable maintenance item to the Air Force will shortly render 50% of the fighters unable to fly and will definitely affect the strategic long-term situation. It was a possible situation where our naval ships would have remained docked, aircraft grounded and submarines confined to bases, while tanks could move only for a few hundred km, because maintenance cycles could not be completed. Such dependence on foreign OEMs erodes the credibility of our own armed forces' deterrence to avoid conflict, with the adversaries knowing that we may not sustain prolonged operations. This also undermines autonomy in foreign policy, since continued access to spares becomes leverage for the OEM nations in the geopolitical arena. Foresight made those in the corridors of power in Delhi realise this fact, and in 2018, post countless deliberations certain changes took place which would bring about profound expansion in the defence production in India.¹

Forging Self-Reliance (2018–2019)

Strategic Partnership Model (SPM). For our own industry to start and compete with what was available with the advanced foreign manufacturers, the technology had to be improved. Doing this the traditional academic way would have been very time-consuming, and the government decided on the Strategic Partnership Model. It was mainly to cover major land, sea, and air platforms for which the expertise did not exist with India. It covered aircraft, helicopters, submarines and Armoured Fighting Vehicles /Main Battle Tanks (AFVs/MBTs). Indian private industry companies would be the strategic partners for these platforms, they would collaborate with foreign firms for licensed production, technology transfer, and localisation of manufacturing. In doing so, the Strategic Partners would become system integrators, supported by specialised vendors and Indian MSMEs. The expected outcomes were competition between private and public sector players for faster absorption of advanced technologies and, while doing so, creating a tiered industrial ecosystem with MSME participation. This would further result in employment generation and skill development in defence manufacturing, with a long-term view towards self-reliance in defence capability,

aligned with “Make in India”.² The Strategic Partnership model in 2018 was an attempt to transform defence procurement from a buyer-seller relationship into a collaborative industrial ecosystem, ensuring both national security and economic growth.

Defence Industrial Corridors. Two Defence Industrial Corridors (DIC) were approved by the government: the Uttar Pradesh Defence Industrial Corridors (UPDIC) in 2018 and the Tamil Nadu Defence Industrial Corridors (TNDIC) in 2019. The two were chosen for a number of reasons: there was an existing industrial base in both these states, there was proximity to ordinance factories and DRDO labs, the connectivity and logistics were good, and they provided geographical balance, one in North India and one in South India, and thus reduced vulnerability to regional disruptions (natural disasters, geopolitical risks, etc). The overriding reason was policy & state support, in that both states offered dedicated defence policies (UP 2018, TN 2019) with incentives like land subsidies, tax exemptions, and single window clearances aligned with political willingness and administrative capacity.³

- **Uttar Pradesh Defence Industrial Corridors (UPDIC).** There are six cities / nodes in the UPDIC, each associated with a different industrial focus.
 - **Lucknow.** For R&D, design, and a prototyping hub, as it is close to the presence of HAL (aircraft systems) and DRDO labs with a focus on avionics, composites, and system integration.
 - **Kanpur.** Was chosen for its engineering and textiles base, as it is known for parachutes, protective gear, and ordnance components.
 - **Jhansi.** Would be focused on heavy defence production and fabrication with land earmarked for armoured vehicle components and artillery systems, strategically located near central India logistics routes.
 - **Agra.** Has been identified for precision engineering and optics, with potential for night vision devices, lenses, and guidance systems.

- **Aligarh.** Was chosen for existing precision hardware skills and is to transform towards an MSME hub supplying small arms components, fasteners, and mechanical sub-assemblies.
- **Chitrakoot.** The Greenfield node, with a focus on explosives, propellants, and energetic materials, is designed to attract new MSMEs/startups in niche defence chemistry.
- **Tamil Nadu Defence Industrial Corridors (TNDIC).** Focused on leveraging Tamil Nadu's existing strengths in aerospace, automotive, and precision engineering. There are six cities / nodes in the TNDIC.
 - **Chennai.** For aerospace design, electronics, and naval systems, it helped with the presence of the HAL helicopter division, ISRO facilities, and major shipyards.
 - **Coimbatore.** Focused on precision engineering, pumps, motors, and mechanical subsystems with a strong MSME base pivoting into defence components.
 - **Hosur.** With an existing ecosystem of automotives, it will focus on electronics, UAVs, and advanced manufacturing being close to Bengaluru's tech ecosystem.
 - **Salem.** Will specialise in steel production, alloys, and materials critical for defence manufacturing.
 - **Tiruchirappalli.** Strongly inclined towards heavy engineering, fabrication, and ordnance components, home to BHEL and other defence-linked industries.

Innovations for Defence Excellence (iDEX). Many global models were studied, and the US Defence Innovation Unit (DIU) model was adapted. The DIU model taps into

commercial Silicon Valley startups to help the US military adopt the latest technology into their defence systems. The idea for iDEX originated from the fact that rigid procurement procedures were hampering rapid innovation, prototyping and absorption of home-grown products specifically designed for the Indian armed forces. It germinated into a platform where the military could handhold agile startups instead of relying on slow procedures and state-owned Public Sector Undertakings (PSU). To give this platform a legal entity, the Defence Innovation Organisation (DIO), a non-profit company, was jointly founded by Hindustan Aeronautics Limited (HAL) and Bharat Electronics Limited (BEL), creating an external executive arm. iDEX does not promote incremental upgrades; it prioritises high-risk, high-reward cutting edge technologies. In 2018, iDEX was the first scheme of its time that offered 1.5 crore funding and definite orders.⁴ The acquisition architecture was fundamentally changed with the military (Army, Air Force, Navy, Coast Guard, etc.) giving direct problem statements through the various schemes like the Defence India Startup Challenge (DISC), bypassing the tendering and re-tendering processes.

The Micro-Component Architecture (2018 Indigenisation List). In defence platforms, the strength of the smallest part defines the credibility of the largest system. Defence and aerospace designs require tight tolerances (micron-level accuracy), which forgings and castings must achieve. Then there is grain structure control and stress distribution to withstand high loads and pressures where even a single defective component can compromise an aircraft's safety. Since many such components require advanced alloys (titanium, nickel superalloys, and aluminium-lithium), these demand-controlled heat treatment, carburisation, and phase transformation knowledge. Without indigenous expertise in metallurgy, we risked bottlenecks in jet engine blades, turbine discs, and structural frames. Also, a resilient supply chain of nuts, bolts, seals, and connectors ensures uninterrupted production and maintenance cycles. In 2018 India's indigenisation push targeted 5,000 baseline defence items such as forgings, castings, nuts, and bolts etc. It is to be noted here that without reliable domestic fabrication of small parts, it would not be possible to achieve self-reliance or supply chain surety for advanced defence and aerospace designs. The 2018 indigenisation list was not about glamour projects; it was about industrial discipline, and by compelling domestic mastery of forgings, castings, and fasteners, the groundwork was laid for next-generation defence and aerospace platforms.⁵ This was done as these

“micro-components” form the architecture of every larger weapons system and are not technically very sophisticated with the industrial infrastructure already existing. However, some mastering of foundational metallurgical processes was required and is going to be indispensable in the future. It will also reduce our dependence on low value but high-volume components that the defence platforms require for maintenance.

Reshaping India’s Defence Industrial Base

The bells had started ringing much before the COVID-19 epidemic, when our dependence on foreign OEMs for spares and critical systems was exposed due to throttling of supply chains. Other Global events that shook the world also opened our eyes towards changing the structure of providing for our defence needs. The Ukraine war and the Gaza and other West Asian conflicts increased our problems; these acted like catalysts to accelerate defence indigenisation, restructure procurement, and reduce import dependence. These shocks exposed vulnerabilities in our supply chains and forced the government to push for policy reforms such as Positive Indigenisation Lists, higher domestic procurement quotas, and liberalised private sector participation.

Policy Reforms. It started with the Defence Production Policy of 2018, which came out as a blueprint for changing the structure of defence procurement, focusing on changing from being the largest global importer to becoming self-reliant in defence needs.⁶ This was followed by the Defence Production and Export Promotion Policy (DPEPP) 2020, it institutionalised defence exports, aligned defence production with indigenisation and created incentives for private industry to partner with foreign OEMs to bring in technology and carry out manufacturing in India for its own needs and exports.⁷ The defence sector had a cap at 49% for Foreign Direct Investment; this was changed in Sep 2020 and increased to 74% without government approval and beyond 74% up to 100% for strategic projects with government approval. While it may seem this was for capital inflows, which it was partly, it was mainly for pulling in technology and embedding India into the global defence industrial base.⁸ A slew of reforms followed, and these opened sectors to the private industry, which erstwhile were the domains of government public sector undertakings. The space sector was opened to the private industry in 2020; this was followed by the Indian Semiconductor Mission in 2022, followed by the Quantum Mission in 2023, and finally even the Nuclear Energy

Sector in 2025. All these sectors have links to the defence production in one way or another. To bring in innovative ideas through research and development, the research, development and innovation (RDI) scheme with a budget of one lakh crore was started in 2025, as was the Electronics Sector Component Manufacturing Scheme (ECMS) to promote the manufacturing of all minor and major electronic products in India.⁹

Corporatisation of the Ordnance Factory Board. A 220-year-old colonial structure in the form of the Ordnance Factory Board (OFB), comprising 41 Ordnance Factories, was corporatised. In other words, make more accountable with corporate governance to enhance efficiency and competitiveness, and lean more towards export orientation. The 41 companies were merged into seven entities, each specialising in distinct production domains, and this was perhaps the biggest reform in the history of defence production in India.¹⁰

- Munitions India Ltd (MIL) for ammunition and explosives
- Armoured Vehicles Nigam Ltd (AVNL) for tanks and combat vehicles
- Advanced Weapons and Equipment India Ltd (AWEIL) for small arms and artillery
- Troop Comforts Ltd (TCL) for uniforms and gear
- Yantra India Ltd (YIL) for components and engineering products
- India Optel Ltd (IOL) for optoelectronic instruments
- Gliders India Ltd (GIL) for parachutes and aerial delivery systems

Push for Indeginisation

Positive Indeginisation lists. The realisation that all nuts, bolts, sub-systems, etc., were needed to be made in India also led to a very concentrated push towards indigenising all of these in India. One of the approaches taken was giving out Positive Indeginisation lists; a total of five such lists have come out since from both the Department of Military Affairs DMA and the Department of Defence Production (DDP). While the DMA lists covered major platforms, the DDP list covered all the nuts-and-bolts subsystems, etc., that went into making these platforms. Items on the list were barred from being imported after specified deadlines and were to be thereafter procured from Indian industry. A total of over 40,000 items in a very short time were identified, and this gave a fillip to the participation of the private sector, MSMEs, and start-ups in defence manufacturing. They responded enthusiastically, and some

14,000 have since been indigenised. The Positive Indigenisation Lists represent both an opportunity for Indian industry and a challenge to meet global standards within tight timelines.¹¹ They have since become a strategic roadmap for India's defence self-reliance, progressively banning imports and mandating local production.

Indigenously Designed, Developed, and Manufactured IDDM. This category reflects India's push for self-reliance under Atmanirbhar Bharat. In the Defence Acquisition Procedure (DAP) 2020, the Buy (Indian IDDM) category is the highest priority procurement route and mandates that defence equipment must be sourced from Indian vendors with a minimum of 50% indigenous content (now in DAP 2026 this has increased to 60%) if not designed in India. Its main objective was to promote Indian research & development leading to in-house manufacturing and simultaneously reduce reliance on imports.¹²

The Story of Indigenous Content (IC). This story starts much before the push for indigenisation, from no mention in the Defence Procurement Policy to 60% requirement in DAP 2026. India relied heavily on direct imports under the *Buy (Global)* or licensed production models via foreign Transfer of Technology (ToT); thus, the early versions of the DPP generally maintained a flat baseline requirement of 30% IC for direct domestic procurements. The main goal then was creating basic assembly lines rather than developing deep manufacturing or indigenous designs. Under the Ministry of Defence MoD framework through DAP 2020 and now DAP 2026, first foreign content is calculated by identifying all non-Indian components and outflows and subtracting them from the total contract baseline. The difference between the original cost and the foreign content gives out Indian content by value. This framework then breaks down IC into three primary, auditable pillars.¹³

- **Software Content (The Digital Pillar).** Here, application software must be coded locally by Indian citizens or Indian entities to count toward IC. Firmware and embedded code if developed domestically is part of the IC. COTS operating systems and other similar core backend platforms are excluded from the IC, and now, through DAP 2026, to qualify as truly indigenous, vendors must legally demonstrate complete ownership of the source code and technical artefacts.

- **Materials and Components (The Physical Pillar).** Covers the physical aspects of the equipment and raw materials, such as locally sourced metals, advanced military-grade alloys, etc. Hardware parts that are fully machined, cast, forged, or stamped by Indian sub-vendors and electronics and sensors such as printed circuit boards (PCBs), indigenous silicon wafers, wiring harnesses, etc., manufactured domestically.
- **Services and Overhead (The Human Capital Pillar).** This pillar includes the domestic workforce and operational costs incurred strictly within India and covers engineering and design work, assembly and integration and testing and quality assurance.

The War on Imported LRUs and Sub-Systems. While the push for indigenisation has brought about a positive turn in looking towards indigenous platforms, it's the internal brains and systems that also need to be tackled too. Line Replacement Units (LRUs) and other sub-systems make for the sinews of the military platforms, and if these are not indigenous, the platform cannot be truly indigenous. This creates the risk of operational paralysis during supply blockades, as platforms without spares are of little use in war if they cannot function. The Positive Indigenisation Lists marked the first decisive pivot in this aspect, the decision to stop imports, line replacement units (LRUs), sub-systems, and components across naval, air, and land systems. These included radar processors, electronic warfare modules, missile guidance units, hydraulic actuators, etc., and by targeting these foreign "black boxes" to make them indigenous, the war against foreign supply chains deepened. By indigenising LRUs and sub-components, it was ensured that in the future, platforms are not hollow shells but sovereignly sustained ecosystems. This also largely creates predictable demand pipelines for private industry, encouraging own firms to specialise in niche technologies, whether thermal imaging sights or electro-optical pods used for ISR activities in the air, land and sea. Interestingly, banks and investors treat this aspect as market guarantees and have led to financing indigenous factories with confidence. In essence, the war on foreign LRUs and sub-systems is about seizing the invisible levers of combat power for indigenous platforms that will win wars, ensuring that our armed forces remain operational even under external pressure.¹⁴

Sensor Problems: 25% of R&D funding for Private Startups. India's defence modernisation hinges on indigenous development of advanced sensors which are used on almost all military equipment but were not made in India, such as AESA radars, thermal imaging equipment, electronic warfare (EW) suites, etc. These remain critical for modern combat but remain bottlenecks, as they have been imported for our needs. There had been structural issues in R&D, as DRDO-led projects often faced long gestation periods and bureaucratic delays, while the private sector did not have access to classified requirements and testing facilities. Then there was also the funding gaps, as venture capitalists traditionally avoided defence due to uncertain returns. In Feb 2022, the government came out with the policy of allocating 25 per cent of the defence R&D budget to be earmarked for private industry & startups. This was to accelerate innovation by looking beyond DRDO and with direct infusion of capital to experiment with niche sensor technologies, and with risk shared with the government, it made defence attractive to the private investors. This also looked at strategic outcomes, reducing dependence on foreign suppliers for critical sensor technologies with dual-use applications giving spin-offs in civilian sectors (telecom, medical imaging, and automotive). This would not only give enhanced survivability for the Indian Armed Forces, but the innovation pipeline would sustain long-term R&D culture in defence startups. With structured collaboration, we can leapfrog into global leadership in sensor technologies. This would help not only our armed forces in operations with secure supply lines but also increase our defence exports to friendly foreign countries.¹⁵ Sensor bottlenecks have been India's Achilles' heel in defence modernisation, and 25% of military R&D funding to private startups is going to transform the ecosystem towards positive results.

Indeginisation Proof of Concept. It is all very well to talk about indigenisation but is it happening on the ground to make us less dependent on foreign defence equipment? Our secretive nuclear submarine reactors and propulsion systems are primarily indigenous (built in India), developed with significant design assistance and consultation from Russia. Let us just look at other platforms to compare. It is interesting to note that INS Vikrant, our 45,000-ton indigenous aircraft carrier commissioned in 2022, uses US General Electric LM2500 marine gas turbine engines produced by GE Aviation. More about it later. This showcases India's ability to design and assemble a capital ship and a nuclear submarine that integrates indigenous combat systems and

propulsion. The integration of propulsion, sensors, weapons, and aviation systems into these platforms reflects the growth and maturity of India's defence ecosystem. Also, both projects relied on the development of warship-grade steel (DMR 249A/B) by the Defence Metallurgical Research Laboratory (DMRL) in collaboration with Steel Authority of India Limited (SAIL), ensuring there was no import of specialised warship grade steel. Both public sector undertakings, private industry, and research institutions have now started collaborating. In essence we can today build from nuts and bolts required for military equipment to highly complex nuclear submarines and aircraft carriers.

Defence Industry at the Crossroads

Have we reached a stage where we are truly strategically autonomous? No, and this will take a much longer time than previously envisaged. The data that we have now, compared to that of a decade ago, tells us that we have reached a phase which is manifold greater, with the defence production doubling since 2018 and reaching ₹1.78 lakh crore, but we have a long way to go to reach strategic autonomy.

The Private Sector in Defence. From being in a purely supporting role to Public Sector Undertakings (PSUs) to breaching the state monopoly and now competing with the PSUs. The private sector has come a long way; the foundations have been laid, and they are very strong foundations based on policy changes and the push for indigenisation. It's in the defence exports that the private sector has come of age and leads the mighty PSU ecosystem by taking a larger chunk of almost 65% of all that we are exporting to friendly foreign countries.

Exports. The exports have increased to almost ₹38,424 crore, and these cover from clothing and body protection equipment to armoured fighting vehicles. There are over 90 countries that are now buying Indian defence equipment and most of these are going to the USA and Europe. The exports are going to increase because of the cost competitiveness of the defence products and increasing conflict scenarios all around the world. Indian shipyards have got orders from Europe; Tata's have established their factory for their wheeled armoured personal carrier in Morocco, while Southeast Asian countries are relying on Brahmos to ward off the threat posed by the ever-increasing Chinese maritime assets.

Industrial Ecosystem. The industrial ecosystem today comprises the humongous Defence Public Sector Units (DPSU) and the ancillary segment that provides them support. It then consists of the growing private sector and their Tier 1 and Tier 2 suppliers. If we take the space and semiconductor sectors, then it is a mixed bag of short-term and long-term results. The space sector has shown real promise, with the private sector developing indigenous satellites and rocket systems, increasing the capacities and capabilities of space-based defence systems. The defence segment of the semiconductor industry is yet to deliver; while a humongous effort is on, it will take 5 – 10 years for results to make a quantifiable difference. There are also the AI and quantum segments of the defence sector; these are the future technologies where warfighting will be defined by secure and lightening-speed transfer of data for near real-time information for decisions to be taken. Much is being carried out in terms of augmentation of AI and quantum technologies, and these segments require indigenous software and hardware requirements for achieving strategic autonomy.¹⁶ It is envisaged that in the times to come, the private sector will become larger than the DPSUs and provide for most of the exports. Within the entire ecosystem, the ammunition segment, the drone & counter-drone segment, the shipbuilding segment and the MRO segments are the rising ones.

The Unfinished Frontier

While some has been achieved in the last few decades, we are still not strategically autonomous in major equipment that makes for an “Aatmanirbharta Bharat”, a self-reliant India. The major chunk of this lies in the engines of all sorts and propulsion systems for all land, air, and sea platforms, and the other major dependency is on semiconductors or chips that run all land, sea, and air platforms and other systems.

Engines.

- **Air System Engines.** We had started developing the Kaveri engine through the Gas Turbine Research Establishment (GTRE), a primary pioneering laboratory under the Defence Research and Development Organisation (DRDO) and located in Bengaluru, Karnataka. This was to be the go-to engine for the Light Combat Aircraft (LCA) and other upgrades which were to become the backbone of the Indian Air Force. The development started in Apr 1989, went through all the development processes but fell short of the thrust

requirements and the thrust-to-weight ratios. The programme was shelved in Sep 2008, after 19 years of work, and the USA's GE F404 was accepted as the substitute, which continues to be difficult to procure, leading to poor numbers of LCA in the Indian Air Force. A very live example of being tied to another country for defence requirements. The case is similar for all other aircraft and helicopter engines, where we are still dependent on foreign suppliers even though the aircraft / helicopter design is our own.¹⁷

- **Sea System Engines.** We do not make marine engines even though GTRE had developed the Kaveri Marine Gas Turbine (KMGT) by re-engineering the core of the Kaveri fighter jet engine into a marine gas generator which successfully demonstrated 12 megawatts (MW) of continuous shaft power, technologically proven for smaller vessels. For larger ships such as destroyers, it still requires structural scaling. We were initially dependent on Russian marine engines, then in Ukraine for our needs, and after the Ukraine war are now dependent on the USA's General Electric LM2500 for elite surface vessels.
- **Land System Engines.** The story is slightly better here with all general duty and logistic vehicles, be it 4x4, 6x6 or heavier ones using Indian engines. However, for all tanks and other armoured fighting vehicles, we are still dependent on foreign suppliers. We source Russian-German-origin engines for most of these, and this makes us highly dependent in case we ever enter a long conflict.
- **Overcoming the Dependency.** For the air systems there are a number of ongoing projects with HAL and private players who are collaborating with global engine manufacturers like Safran and Rolls Royce to develop and manufacture engines in India with full IPR rights for Indian-designed air platforms. The case is a bit different for Sea Systems with Indian companies in both the private sector like Bharat Forge¹⁸ and Kirloskar, and the public sector, like BHEL designing different power output engines for the Indian Navy.¹⁹ For the Land Systems, the DATRAN 1500-hp Heavy Military Engine has already been designed by the Combat Vehicles Research and Development Establishment

(CVRDE) for Future Combat Tanks and other heavy vehicles.²⁰ Also, CVRDE and DRDO have initiated advanced, forward-looking design studies exploring hybrid-electric setups and hydrogen fuel cell stacks for other armoured fighting vehicles, smaller than tanks. While the current situation feels undesirable, with the push that has been given to this aspect of defence development, the right steps are already in place and definite results will materialise.

Semiconductors. We started the semiconductor journey in the early 1960s; however, due to restrictive bureaucratic controls, we lost the opportunity then. The second time came in the 1980s when, in 1984, the government established Semiconductor Complex Limited (SCL) in Mohali. SCL started fabricating cutting-edge chips before Taiwan's TSMC was even founded. A catastrophic and mysterious fire destroyed the SCL facility in 1989, and slow rebuilding efforts took us out of the early commercial semiconductor and related hardware race. While the hardware story halted, the design chapter of the semiconductor industry took off. Global giants like Intel, AMD, NVIDIA, and Qualcomm set up massive R&D hubs in Bengaluru, Hyderabad, and Noida, and nearly 20% of the world's semiconductor design engineers are based in India. However, every chip designed in India had to be sent abroad to Taiwan, South Korea, or the USA to be manufactured. Then came the Indian Semiconductor Mission in 2021 with an initial outlay of ₹76,000 Crores in Semicon 1.0, which has now expanded to ₹1,27,500 crore in Semicon 2.0. In a decade, we will be designing and manufacturing semiconductor chips for nearly 70% of domestic applications, and if all goes well, then by 2035, we aim to be among the top semiconductor manufacturing nations globally.²¹

Conclusion

Initiatives like DPEPP 2020, Positive Indigenisation Lists, and corporatisation of the Ordnance Factory Board have laid a robust foundation for transformation. The private industry too has moved from a supporting role to becoming a major contributor to our defence production. Steps have been taken to address all weaknesses while increasing our strengths for the technologies already with us. Our ecosystem for defence production is changing and reshaping, diversifying beyond DPSUs for exploiting the latest technologies in drones, AI, quantum, and space technologies. We still lack our own engines for air, sea, and land systems, along with semiconductor capabilities, which remain challenges to be overcome. The future with structured

collaboration between public and private sectors, targeted R&D funding, and global partnerships for technology transfer may seem bright and on an upward trajectory toward eventual strategic autonomy. However, much needs to be accomplished for us to be strategically autonomous; we still remain dependent on foreign suppliers for critical technologies, and this has delayed true self-reliance. Let us not remain satisfied with what has been achieved till now; we need to keep thinking smart and acting fast to keep fuelling the push towards Aatmanirbharta with better policies, smarter minds and determination that will take us towards becoming a strong nation.

Declaration

I declare that this manuscript is being submitted exclusively to CENJOWS for publication consideration, is original, and has not been published or submitted elsewhere. I further certify that it contains no classified, restricted, or sensitive information and is based entirely on open-source material suitable for publication in the public domain.

ENDNOTES

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