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From Import Dependence to Indigenous Power: Rethinking India's Defence Industrial Strategy

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Abstract:

This paper critically examines the Atmanirbhar Bharat (Self-Reliant India) initiative as a multidimensional strategy to advance India's economic, technological, and strategic autonomy, with a particular focus on defence indigenisation. Drawing on policy reforms, institutional restructuring, and the rise of robust public-private partnerships, the study traces India's shift from an import-dependent paradigm to a resilient, innovation-driven manufacturing ecosystem. Analysing recent production and export trends, the paper highlights the rapid growth of domestic defence capabilities, exemplified by indigenous platforms such as the HAL Tejas fighter jet and the C-295 transport aircraft, as well as the integration of MSMEs into complex supply chains. The discussion situates defence self-reliance within broader geopolitical and economic contexts, arguing that strategic autonomy is both a technical objective and a critical necessity in a multipolar world. The analysis also explores how regulatory reforms, clean energy investments, and the inclusion of historically underrepresented groups are transforming India's industrial landscape. Finally, the paper identifies systemic challenges, including supply chain vulnerabilities and technology transfer bottlenecks, and proposes policy recommendations to strengthen India's defence autonomy, industrial resilience, and global competitiveness without compromising operational readiness or inclusivity.

Keywords: Defence procurement reform, Atmanirbhar Bharat, Strategic autonomy, Indigenous defence production, Defence industrial strategy, Self-reliance in defence

Introduction

From Kargil to Galwan, India's defence has undergone active upgradation, focusing on critical vulnerabilities and import dependencies; however, the Atmanirbhar Bharat initiative is rewriting that narrative. Atmanirbhar Bharat, launched in 2020, is a strategy aimed at reducing dependency on foreign sources and fostering domestic capacities within the country by introducing the Defence Acquisition

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Procedure 2020. Capitalising on the recent flourishing of India's automobile industry and the rapidly expanding second-harness petrochemical sector, for example, in just four short years, with introductory chapters on policy changes, institutional reforms, and the establishment of joint ventures essential to autonomous development, conveys self-reliance. Based on recent measures of production and exports, as well as the Chinese market's sensitivity to the appreciation of the renminbi (RMB), this illustrates an evolution from an import-dominated procurement system to one driven by interaction and innovation. It also shows that, in this analysis, the defence industry both mirrors broader geopolitical and economic trends and is pivotal to India's position in the world arena. Self-reliance, it argues, represents not only a technical target for production but is also strategically necessary as our international environment becomes ever less unipolar. Adopting a multidisciplinary perspective, this article examines the impact of home-focused research and development (R&D) and innovation, facilitated through public-private cooperation and regulatory reform, on India's defence posture. It highlights the systematic shortfall, such as a secure resource for supply and an inverted technology bottleneck for transfer, which suggests that India's defence autonomy can be achieved without compromising its readiness or global outreach. Despite having one of the largest defence industrial ecosystems comprising 39 ordnance factories and nine defence public sector undertakings, India remains among the world's top arms importers. Now the question is, can India realistically achieve defence self-reliance, given its current technological dependencies, procurement challenges, and strategic imperatives?

Historical Shift of Defence Manufacturing in India

British Era

The Government of India launched the "Self-Sufficient India" (Atmanirbhar Bharat) as an essential initiative. The Constitution serves as a blueprint that focuses on promoting India's economic strength, while also ensuring the production of goods that are globally competitive. Let's revisit history to explore the roots of defence manufacturing in the colonial era of military industrial policy, and trace the origins of defence manufacturing in our colonial military industrial policy. It was a measure designed to advance imperial rather than native potential. Various were established, including one at Fort William in 1775 and a gunpowder factory in Ishapore in 1801. The intentions of these institutions were never to foster indigenous innovation or strategic autonomy. The Gun Carriage Factory (GCF) in Jabalpur (1905) produced only arms, ammunition, and logistical equipment for British forces in volatile frontier regions. It is observed that during the British period, they discouraged local R&D, fearing that this type of technological empowerment could fuel resistance and excavate imperial dictatorship. At that time, India was reduced to being a supplier

of raw materials and a less attractive destination for manufacturing goods, resulting in deindustrialisation and stagnation in technological growth.

Post-Independence era

This era prioritised strategic autonomy but was constrained by limited technological capacity and bureaucratic inertia. India is left with an outdated and fragmented defence manufacturing hub. The then Prime Minister Pandit Jawaharlal Nehru stressed the importance of industrialisation. No doubt India was rich in raw materials and infrastructure, but with strict limitations on advanced technology and a lack of institutional autonomy, it was inferior in innovation. It is placed in a structurally disadvantaged position. Soon after Independence, Defence manufacturing was placed under state control in a public sector undertaking. Hindustan Aeronautics Limited (HAL) is involved in the production of aircraft and aerospace systems. In 1958, the Defence Research and Development Organisation (DRDO) was established to drive indigenous research and development across various fields, including weapons systems, electronics, and strategic technologies. Ordnance Factory Board (OFB), which expanded to manage a network of factories producing arms, ammunition, and logistics equipment.

Post-Liberation: Private Sector & Joint Ventures

With the global adoption of Liberalisation, Privatisation, and Globalisation (LPG), India has undergone a significant shift in its economy. As a result of this economic reform, defence has become one of the sensitive areas of the Indian Government sector. In 1970, Bharat Dynamics Limited was established under the Ministry of Defence, focusing on strategic defence equipment. In the year 2001, the private sector was permitted to take part in defence manufacturing with FDI capped at 26% allowing the joint ventures for technological transfer and access to global supply chains with the different joint ventures with foreign OEMs. In 2021, Armoured Vehicles Nigam Limited (AVNL) is a Public Sector Undertaking (PSU) of the Government of India, under the Department of Defence Production, Ministry of Defence, and was established. The other initiatives, such as Make in India and iDEX (Innovation for Defence Excellence), further catalysed private sector involvement, especially MSMEs and startups. By 2023–24, India's annual defence production was expected to have tripled, with 75% of the acquisition budget earmarked for the domestic industry. HAL, BEL, and DRDO remain central, but private firms are increasingly shaping the innovation landscape. GDP on the defence expenditure as a percentage are as follows in a table format:

Table 2: Defence Expenditure as a Percentage from 1960 to 2024.

Year	GDP
1960	2.76%
1970	2.52%
1980	3.65%
1990	2.91%
2000	2.76%
2010	2.50%
2015	2.40%
2020	2.90%
2021	2.70%
2022	2.60%
2023	2.40%
2024	1.90%

From the table above shows how the GDP growth and downfall of investment fluctuation have shifted every decade and according to the years 2024 investment in the defence has fallen down drastically. From 80's it was high and a steady decline in recent years. The fall to 1.90% in 2024 marks the lowest point in this trend, indicating a reduced prioritisation of defence spending relative to the overall economy.

Current policy push under Atmanirbhar Bharat:

The DAP 2020, also known as the Defence Acquisition Procedure 2020, unveiled in September 2020, is an overhaul of India's defence procurement policy that superseded the old Defence Procurement Procedure (DPP). In line with the Atmanirbhar Bharat mission, DAP 2020 is strongly focusing on indigenisation and optimisation. AfD's kernel pans the Buy Indian IDDM modalities, which aim to support indigenous design and production ahead of imported ones. To incentivise innovations, the policy also envisages Make-I and Make-II provisions to promote public-private partnerships in R&D for the design and development of prototypes, not only for a wide range of systems but especially for complex and strategic systems. In view of the requirement for time-bound execution, DAP 2020 provides for the setting up of PMU with authorisation to make decisions and ensure the timely implementation of contracts. The policy also enhances the offset guidelines, which include doing away with traditional methods of calculating offsets for government-to-government and single-vendor procurement, as well as by themselves, to promote the 'Make in India' programme and restricts them primarily through domestic manufacturing and services.

These reforms indicate a shift from transactional procurement to capability-building, and an attempt to build an Indian defence eco-system that is competitive with any other sector both at home and abroad.

The Defence Production & Export Promotion Policy (DPEPP 2020) is an ambitious strategic roadmap that envisions India becoming one of the top defence production and export hubs globally. Based on the Atmanirbhar Bharat vision, the policy has ambitious targets to achieve a turnover of ₹1.75 lakh crore in defence manufacturing and export of ₹35,000 crore by 2025. To achieve this, it envisions ecosystem development through incubation and outreach for startups and MSMEs, utilising platforms such as iDEX (Innovation for Defence Excellence) and Mission Raksha Gyan Shakti, to instil innovation, agility, and a grassroots participatory culture that supports meeting national security objectives. The policy also remains committed to intellectual property generation and commercialisation in Defence Public Sector Undertakings (DPSUs) & the newly corporatised Ordnance Factories, promoting indigenous design and minimising dependence on foreign technologies. Through the rationalisation of production and export targets, as well as the alignment of regulation with innovation, DPEPP 2020 announces a radical departure from quantity-oriented procurement to capability-led expansion, positioning India not just as a market provider but as a qualified practitioner in the global defence goods ecosystem.

Corporatisation of Ordnance Factory Board (OFB)

The OFB, an institution dating back to the time of the Raj, was corporatised in 2021 as seven separate DPSUs in a historic structural reform. Such a step was taken with the intention of transforming the traditionally monolithic and bureaucratic system into a more dynamic, accountable, and performance-driven one. The corporatisation aimed to enhance efficiency and competition through modern management techniques, better financial transparency, and operational autonomy. Reorganising the OFB into specialised entities that cater to armaments, vehicles, troop comfort items, and ammunition will facilitate improved financial control and production efficiencies, while addressing rapidly changing defence requirements. Importantly, this transition also enables alliances with private industry and foreign OEMs in developed and emerging markets, which would include joint ventures, technology transfer and becoming part of the global supply chains. While the shift presents challenges in adapting the workforce and addressing legacy systems, into which significant investments have been made in India over time, it's a defining route to aligning defence manufacturing with global benchmarks. It is also part of the larger Atmanirbhar Bharat initiative aimed at achieving self-sufficiency.

Positive Indigenisation Lists

The Ministry of Defence has released eight PIP lists so far under Make-II, through which 209 items (earlier 101) have been notified. The existence of two more lists for the Army and Air Force has also been confirmed. They ban the import of specific weapons systems and platforms, such as Light Combat Helicopters, Conventional Submarines, and Armoured Fighting Vehicles, to encourage the domestic industry to manufacture them in India and reduce reliance on foreign countries for these supplies. The embargoes are phased from 2020 to 2024, giving the Indian industry a calibrated timeframe to ramp up capabilities, absorb technology, and minimise operational requirements. This is not only a confidence-generating move in indigenous manufacturing but also acts as a demand-side guarantee for private and public sector players to invest in defence R&D and production. Procurement priorities and industrial preparedness mark a move away from reactive acquisition towards proactive capability creation, rooting India's defence preparedness in indigenous innovation and strategic autonomy.

FDI Liberalisation & Offset Policy Reforms

To kick-start investments from abroad and to expedite domestic capacity-building, the Government of India relaxed Foreign Direct Investment (FDI) norms in defence manufacturing, raising the automatic route cap from 49 per cent to 74 per cent. This reform is a well-conceived step to encourage global Original Equipment Manufacturers (OEMs) to codevelop more production linkages in India, from mere assembly bases to full-scale manufacturing. Corresponding to this change, the government also amended its offset guidelines, shifting away from the assembly of components at the first-tier level to co-manufacture. The new norms introduce multipliers to encourage Indian firms to engage in meaningful technology transfer, joint development, and sourcing within global supply chains. By merging investment policy with strategic production aims, the reforms aim to catapult India from being a purchaser of defence technologies to a co-creator, which in turn is intended to bolster both its industrial base and its geopolitical leverage.

Political Economy Dimensions

Strategic Autonomy and Changing Contours of India's Defence Ecosystem

India's dual aspiration for indigenisation is increasingly defining strategic autonomy in defence, and yet reliance on foreign OEMs. This fault line is not simply technical; it is structural, ideological, and runs deep in the trajectory of India's defence management. Even as they seek to localise production and reduce import dependency through measures like DAP 2020, the "Buy (Global–Manufacture in India)" category of

acquisition, foreign OEMs will remain indispensable suppliers of vital technologies such as propulsion systems, avionics and electronic warfare platforms. The reliance is particularly stark on top-tier equipment, the research and development on which in the country remains in its infancy. For example, while the development of indigenous platforms, such as the Tejas and Akash missile systems in India, has made significant progress, there are still critical systems that continue to be imported. Private players, such as the Tata Group, Mahindra Defence Systems, or L&T Larsen & Toubro, have come to redefine the limits of indigenous potential. That those dependencies are strategically vulnerable was laid bare during recent border tensions, when holdups of foreign deliveries and license restrictions revealed weaknesses in India's operational readiness. The table below outlines how the defence budget was allocated in the last financial year, along with the incidents covered under each respective year.

Table 2: Fiscal Mapping of Budget from 2020-21 to 2025-26 and subject covered.

Financial Year	Defence Budget	Subject Covered
2020–21	₹4,71,000	Border tensions; COVID-era adjustments
2023–24	₹5,93,538	Modernisation and pensions dominate allocation
2024–25	₹6,21,940	9.5% increase; 1.9% of GDP; focus on domestic procurement
2025–26	₹6,81,000 (projected)	Emphasis on R&D, AI, cyber warfare

Between 2020-21 and the projected 2025-26, there has been a change in India's defence Budget. The geopolitical confrontations with neighbours have been reversed, economic considerations no longer impinge as they did earlier, and an indigenisation thrust is in place. In 2020–21, the Galwan Valley clash with China led to an emergency surge in arms, surveillance, and troop mobility, at the same time that COVID-19 compelled fiscal restraint. Despite these limitations, national defence never ceased to be a priority. The budget was hopelessly lopsided in favour of revenue expenditure, mainly salaries and pensions, with hardly any money left over for modernisation. For 2023–24, the government has accelerated the modernisation process with an allocation of ₹5.93 lakh crore, and funds would be directed to indigenous platforms, including the Tejas fighter aircraft, Dhruv advanced-light helicopters, and warships. It was also a significant policy change during Atmanirbhar Bharat when orders were increased from Indian vendors as well as for startups and MSMEs in defence manufacturing. In 2024-25, too, the budget increased by a significant 9.5% to ₹6.21 lakh crore, even though it accounted for just about 1.9% of the GDP. The investment in drones, EW, and cyber capabilities was an indication of the increasing importance it was

giving to technological infusion. In 2025–26, the projected allocation of ₹6.81 lakh crore is indicative of a move towards R&D-based innovations, with funding for AI, quantum technologies, and the creation of a tri-service Cyber Command. A policy of indigenisation, in line with the emphasis on Aatmanirbhar Bharat, the defence budget continues to reflect a focus on reducing import dependence and developing domestic capacity. These increasing allocations are a strategic indicator of India's seriousness in preserving credible deterrence amidst the brewing regional tensions and the need for an indigenous future-ready defence ecosystem.

The Emergence of Private Conglomerates: The New Industrial Vanguard

To address these challenges, India's defence industrial complex is silently undergoing a revolution. Private sector firms, such as the Tata Group, Mahindra Defence Systems, and Larsen & Toubro (L&T), have emerged at the forefront of remodelling the landscape of indigenous capability. These companies bring to bear nimbleness, International collaborative arrangements, and a capacity for innovation that frequently exceeds that of the legacy-ridden Defence Public Sector Undertakings (DPSUs). They are not mere contractors but private players who will co-create India's defence future. Their connectivity to global markets, absorptive capacity for technology, and their ability to scale up production make them the ideal partners in India's quest for strategic autonomy.

According to L&T, a defence manufacturing giant of Indian origin, it had been an investor in indigenous platforms for close to two decades. Its work ranges from naval systems and artillery to missile launchers, and has also been behind the K9 Vajra-T howitzer and modular shipbuilding in India. Mahindra Defence, on the other hand, has focused on armoured vehicles, surveillance systems, and aero components, collaborating with many overseas OEMs to provide high-end technology to India. They are not just contractors but private players who will co-create India's defence future. Their access to global markets, capacity for technology absorption and ability to scale up production make them indispensable partners in India's pursuit of strategic autonomy. Yet their success will rely not just on regulatory clarity but also on access to defence tenders, and a level playing field with DPSUs (which still run the show in terms of large procurement).

Defence Corridors: Decentralisation Meets Developmental Politics

Setting up Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu is a conscious move to decentralise the manufacturing of defence products. They are intended to generate industrial growth in

backwards areas by attracting investment, encouraging MSMEs and generating employment. Uttar Pradesh has a corridor that covers points such as Lucknow, Kanpur, Jhansi, and Aligarh. The corridor in Tamil Nadu, however, is between Chennai and Coimbatore, Coimbatore and Tiruchirappalli and from there on to Hosur. Together, the projects represent a strong thrust towards regionalised defence production and the distribution of holdings in traditional hubs such as Bengaluru and Hyderabad. These firms can utilise agility, international tie-ups, and innovation bandwidth to a much greater extent than the legacy-ridden Defence Public Sector Undertakings (DPSUs). The partnership of Tata with Airbus to manufacture the C295 transport aircraft in Vadodara is an outstanding example. Through the use of more than 85% sourced content, this project is a clear example of how these partnerships can connect local supply chains and build lasting capacity. Tamil Nadu, with a large manufacturing base supported by trained manpower, can secure big players, including L&T and Bharat Forge; however, cross-state coordination with the centre still poses challenges. Making these corridors work will depend on governance coherence, timely infrastructure upgrades, and stakeholder engagement. Without them, the corridors could end up being symbolic rather than transformative. The corridors will have to reconcile industrial expansion and strategic imperatives, ensuring that decentralisation does not dilute security procedures nor disrupt supply chains.

National Security vs Industrial Policy: A Cauldron of Tension

At the heart of India's transformation of defence lies a perennial tension that presents this puzzle: how to square national security imperatives based on control, secrecy and preparedness with the economic logic of liberalisation, competition and global connectivity? This tension is not merely bureaucratic; it is ideological in nature. Defence is a national responsibility, and it becomes a source of the nation's identity and strategic orientation. Conversely, it is also an industrial sector like any other, driven by market forces, innovation cycles, and global supply chains.

This dichotomy is reflected in policy conundrums. For example, the expansion of the Foreign Direct Investment (FDI) limit to 74% under the automatic route has generated global interest, but also concerns about foreign control over sensitive technologies. In the same way, updated offset directions (which emphasise "full systems" manufacturing rather than component assembly) have also been introduced to incentivise technology transfer. Still, they confuse Original Equipment Manufacturers (OEMs) used to operating under legacy structures. the push for indigenisation through Positive Indigenisation Lists, which prohibit the import of more than 500 defence items, has opened up possibilities while also imposing constraints. Although these lists provide demand-side security for domestic manufacturers, they are also

vulnerable to the risk of excluding emerging technologies that India is currently unable to manufacture at scale. The ideological battle also extends to what the police choose to buy.

Strategic Sovereignty in a World of Multilateralism

India's defence is taking place under the shadows of a world of supply chain disruptions, grey-zone perils and technological asymmetry. The COVID-19 pandemic, the Russia-Ukraine conflict and increasing tensions in the Indo-Pacific region have highlighted the vulnerability of international defence supply chains. In this respect, strategic sovereignty designing, producing, and deploying defence systems without relying on others is no longer a possibility; it is a virtual necessity. India's response has been multifaceted. The defence budget has increased two-and-a-half times in the last 10 years, and it will be ₹6.1 lakh crore by 2025–26." Annual defence production has tripled, with 75% of the acquisition budget reserved for Indian industry. Defence exports have increased by almost thirty times, and made-in-India equipment is now being exported to more than 100 countries. The INS Vikrant, Pinaka rocket system and Akash missile demonstrate India's increasing ability to manufacture complex systems in volume. Another equally important trend is the weaponisation of startups, especially new-age defence startups, such as Idea Forge, which provides drones to the Indian Armed Forces. Start-up companies like these are the new frontiers in defence technology, nimble, tech-powered and rooted deeply in operational imperatives. Initiatives such as IDEX and the Technology Development Fund (TDF) are fostering this ecosystem by providing financing, mentoring, and a procurement channel. Yet, challenges remain. India also needs to focus on supply chain vulnerabilities, technology bottlenecks, and human capital gaps. It must also establish a robust IP regime, secure the cyber domain, and build relevant testing and certification ecosystems in line with global norms. Strategic autonomy is not only about building it but also about controlling the whole life cycle of defence capability.

Challenges in building an indigenous defence capability in India

Challenges of Indigenous Defence Production in India

India's emphasis on strategic autonomy in defence is underpinned by the Atmanirbhar Bharat vision to become more than one of the largest importers of arms and turn into an independent defence manufacturing centre for the world. While policy changes, such as the Defence Acquisition Procedure (DAP 2020), the recent release of the Defence Production and Export Promotion Policy (DPEPP 2020), and the corporatisation of OFB, have set the stage for this transformation, the journey towards Atma-Nirbharta in

defence production is paved with structural, institutional, and technological challenges. These problems are not standalone ones, but somewhat deeply intertwined and emblematic of systemic limitations.

Barriers to Domestic R&D and Transfer of Technology

The persistent bottleneck in research and development (R&D) is at the heart of India's defence indigenisation challenge. It is only that in India, we have the DRDO, HAL and BEL, but still with much fragmented coordination, negligible private sector investment and no primary drive towards frontier technologies for defence. From the USI of India's capability assessment: While there has been a significant spurt in production around ₹1.27 lakh crore by Financial Year 2023-24, domestic defence production lags innovation in high-end systems.

The transfer of technology, a key factor in building capabilities, has also been restricted. The vast majority of foreign Original Equipment Manufacturers (OEMs) are uncomfortable exposing Internet Protocol, especially in sensitive sectors such as propulsion systems, radar, and electronic warfare. Even in collaboration projects, technology assimilation is superficial, keeping the Indian partners to assembly and integration rather than design and development. The offset policy, ostensibly designed to promote technology inflow, has been revised several times, and its efficacy is being challenged. Without strong R&D and substantial technology transfer, India may end up as an assembly shop that lacks fundamental IP rights, a strategic vulnerability in an era of warfare or supply chain disruptions.

Dependence on Foreign Critical Subsystems

The country's defence platforms, all of which are either produced indigenously or co-developed, still depend significantly on foreign subsystems in propulsion, avionics, semiconductors, and composites. The Tejas Light Combat Aircraft, for example, is hailed as a symbol of homegrown technology. But it still relies on GE engines from the United States and radar parts imported from abroad. India's naval platforms also generally utilise foreign sonar systems, propulsion machinery and fire control technologies.

This dependence is not just technical but also has strategic implications. It should be noted that access to these subsystems may be limited, delayed or politically influenced in times of geopolitical concern. The Russia-Ukraine conflict and trade tensions between the United States and China have also exposed the fragility of global supply chains and risks associated with over-reliance on foreign vendors. semiconductors, components that are essential in modern defence systems, are almost purely imported as India doesn't have a robust domestic fabrication industry. Although initiatives like the India Semiconductor

Mission aim to fill this gap, progress has been slow. Defence-specific applications require specialised design and testing capabilities. The difficulty is exacerbated by the fact that coinage had no native substitutes. Quality subsystems require long-term investment, talented human resources, and cross-disciplinary collaboration areas, in which India is still emerging. As long as these voids remain uncovered, the country will remain at risk and will be far from achieving self-reliance. All Indian defence systems will continue to be subject to external shocks/strategic dependencies.

Bureaucratic Delays and Procurement Inefficiencies

India's defence procurement process has been frequently criticised over the years, with many observers highlighting its bureaucracy and red tape, as well as a lack of discernible transparency. The reforms to streamline decision-making and the prioritisation of indigenous categories were announced in DAP 2020, but are rolling out unevenly. PMU was supposed to help facilitate contract implementation, but coordination among ministries, services, and contractors is still bottlenecked. Procurement times are typically extended, tenders are postponed or cancelled, and there have been times when they have been reissued. Not only does this impact operational readiness, but it also hinders the participation of the private sector, particularly MSMEs and startups, which are not financially equipped to undergo lengthy and tedious bidding processes. It was observed that the self-reliance index in defence, which was envisioned to reach 70% by 2005 from 35%, has largely remained unattained, with the actual figure hovering around 35–40% in critical segments. Its Marine procurement is frequently influenced by interservice rivalries, shifts in strategic focus, and political considerations. The absence of a consistent long-term acquisition roadmap has fragmented demand signals, making it difficult for the sector to plan investments, scale production, or drive innovation. The result is a reactive, transactional procurement environment rather than one that is strategic and capability-driven.

Problems with Skills Shortage and Ecosystem Building

Enabling indigenous capability is not just about infrastructure, but it is also about human capital, institutional culture, and ecosystem maturity. The country is afflicted by a range of skills shortages, including systems engineering, materials science, embedded software, and defence quality manufacturing. Institutes like IITs produce thousands of world-class engineers, but a tiny percentage are trained in defence, and then those too often migrate out, thanks to a lack of an ecosystem at home to absorb them.

The ecosystem for defence manufacturing is not developed enough. Though DPSUs account for most production, they are not sufficiently nimble or innovative for rapid prototyping and iterative design. The private players, however, are increasingly active, struggle with access to testing facilities, certification regimes and defence-specific standards." Micro, Small, and Medium Enterprises (the "MSMEs"), which could potentially become key component manufacturers, find it challenging to raise capital, comply with standards, and integrate into supply chains. Programmes such as iDEX and the Defence Innovation Organisation (DIO) offer early solutions to these gaps, but their scale and institutional backing are limited. The lack of an active defence start-up ecosystem, as well as the relatively low interest of venture capital funds in funding defence projects, is also a further brake on innovation. Without an ecosystem that encourages innovation, experimentation and risk-taking, indigenous capability will always remain aspirational rather than operational.

Interconnected Challenges and Strategic Implications

These struggles are not separate, but they are profoundly interconnected. R&D backlogs constrain the development of key sub-systems and sustain a dependence on foreign suppliers. Such bureaucratic delays deter private investment, undermine the ecosystem, and widen skill gaps. The net result is a defence industrial base that is growing but failing to become more robust. Strategically, this has profound implications. In the age of grey-zone warfare, cybersecurity threats and 'weaponisation' of supply chains, it is not just a matter of honour but also strategic survival that India must innovate, manufacture and deploy its own defence systems. The world order of defence is moving towards modularity, autonomy and AI-based platforms. In the absence of indigenous strengths in these areas, India risks becoming strategically irrelevant. India's ongoing geopolitical ambitions to play the role of a net security provider in the Indo-Pacific region, balancing China, and becoming a global arms exporter, can only be realised if it can scale up to deliver platforms that are reliable and of high quality. Defence diplomacy, joint training and strategic partnerships are all strengthened when supported by national capability. On the other hand, reliance on overseas systems can limit strategic options, retard deployments and open vulnerabilities.

As India seeks to become Atmanirbhar (self-reliant) in defence, it can draw interesting cues from other smaller countries, such as Israel, South Korea, and Turkey, that have successfully transformed their defence ecosystems into something resembling a globally competitive and innovative one. While small in size, Israel has developed a robust defence industry that relies on high-tech innovation, nimble start-ups and strategic public-private partnerships. With firms such as Elbit Systems, IAI, and Rafael leading the way in UAVs, missile defence (e.g., Iron Dome), and cybersecurity technology development, there is a tradition of

rapid prototyping and military–industry fusion to support these efforts. South Korea, once dependent on U.S. military assistance, has become one of the world's fastest-growing defence exporters, with companies like Hanwha Aerospace and KAI excelling in industries such as precision machinery, robotics, and aircraft systems. Its success has been achieved through well-coordinated policy schemes, substantial R&D spending and development resources, as well as institutionalised procurement programs such as DAPA, which promote public–private cooperation and export preparedness. Turkey, for its part, has successfully leveraged geopolitical urgency and industrial policy to develop homegrown platforms, such as the Bayraktar drones and Altay tanks, while actively promoting defence exports to Africa, Central Asia, and the Middle East. The secret to these models lies in a more deliberate alignment between government, industry, and research institutions, as well as explicit export targets, technology absorption mechanisms, and flexible procurement. To India, adopting these models means more than just policy reforms; it demands a cultural shift toward innovation, risk-taking, and ecosystem-wide coordination that transcends bureaucratic silos and legacy limitations.

Implications for Strategic Autonomy and Geopolitics

India's quest for strategic autonomy in defence, a cornerstone of the Atmanirbhar Bharat push, is fundamentally altering its geopolitics even as it grapples with a multipolar world characterised by changing alliances, supply chain challenges and technology asymmetry. At the core of this transition is the need to reduce dependence on foreign Original Equipment Manufacturers (OEMs) and develop native capacities that can give India an upper hand when negotiating with global powers for defence cooperation. This transformation is even more crucial given India's role in the QUAD and the reconfiguration of Indo-Pacific strategic architecture, where maritime security, interoperability, and deterrence against China's assertiveness are core issues. As the country draws closer to tighter defence relationships with the US, Japan, and Australia, its promise to deliver joint exercises, logistics chains, and technology transfer will likely be tied more closely not only to shared strategy but also to its domestic industrial base. The 'make for the world' drive enhances India's net security provider status in the Indo-Pacific, where it can deploy systems such as INS Vikrant, BrahMos missile system and Tejas fighters in multilateral settings without ceding operational sovereignty. Furthermore, it allows India to dictate the terms of engagement, including when to engage with specific players, how to do so, rather than being bound by licensing conditions or end-use monitoring that is binding on some foreign suppliers. India's relationship with the U.S has strengthened significantly in the last decade, and foundational pacts like General Security of Military Information Agreement (GSOMIA), Logistics Exchange Memorandum of Agreement (LEMOA), Communications

Compatibility and Security Agreement (COMCASA) and Basic Exchange and Cooperation Agreement (BECA) have paved the way for more interoperability. We also have agreements for sharing intelligence. There are other issues where the relationship remains transactional, such as defence technology transfer. The United States, which has backed India's rise as a strategic partner, has been circumspect in transferring sensitive technologies, such as jet engines, stealth systems, and cyber warfare capabilities. Indigenisation, by extension, is a strategic leverage that enables India to bargain from a position of greater strength, demand co-development rather than mere co-production, and not succumb to arm-twisting that dictates exclusive procurement from Western platforms.

A case in point was India's decision to proceed with buying the S-400 air defence system from Russia despite American opposition under the Countering America's Adversaries Through Sanctions Act (CAATSA). India's decades-old defence relations with Russia, dating back to Cold War solidarity and long years of procurement, remain alive, particularly in areas such as submarine technology and nuclear propulsion systems, as well as joint ventures like BrahMos. But Russia's increasing alliance with China and the country's global seclusion after Ukraine have muddied the waters. Indigenisation enables India to remain strategically flexible, maintaining existing alliances while gradually weaning itself off Russian spares and systems, many of which are currently subject to sanctions or supply chain disruptions. France, in contrast, has become a dependable and pragmatic partner by providing relatively less politically encumbered platforms such as its Rafale fighter jet and Scorpène-class submarines. The India–France strategic partnership has its challenges, but it also rests on common interests in the Indian Ocean, counter-terrorism, and defence industry cooperation. French OEMs have been more willing to transfer technology and engage in joint R&D, thereby making them potential beneficiaries in India's indigenisation drive. The co-development of next-generation fighter engines and naval systems also signals that the relationship is maturing, developing not merely as one of strategic autonomy, but as an industrial partnership. Indigenisation makes it easier for India to negotiate better deals with its suppliers, particularly those undertaking full-spectrum imports of Western platforms and systems. Indian orders must not only bring assembly lines but also design rights, export flexibility, and long-term ecosystem integration. Between the lines, in the Indo-Pacific, India's defence indigenisation has wider geopolitical ramifications. With heightened regional tensions around the South China Sea, Taiwan Strait and the Indian Ocean, India's capacity for power projection and defence of its maritime interests relies on its ability to deploy and maintain homegrown assets. The creation of Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu, the corporatisation of the Ordnance Factory Board, and the entry of private players such as Tata, L&T, and Mahindra are all strategic measures aimed at decentralising and diversifying India's defence base. This not

only enhances domestic resilience but also positions India as a potential exporter of defence systems to Southeast Asia, Africa, and Latin America regions, which require low-cost and reliable suppliers of equipment, as opposed to Western countries or China. Export-oriented indigenisation enhances India's soft power, fosters strategic dependencies, and opens up new frontiers for defence diplomacy, and the road to strategic autonomy is not without friction. Intersecting with all four is India's longstanding foreign policy strategy of multi-alignment, which involves simultaneously engaging the US, Russia, France, and regional players. Indigenisation mitigates the risk of overreliance but requires coherence in policy, investment, and institutional building. The difficulty arises when national security imperatives of secrecy, readiness, and control clash with the economic logic of liberalisation, competition, and global integration. For instance, liberalising FDI in defence to 74% under the automatic route generated foreign interest but has also instilled fears of foreign control over sensitive technologies. New offset thresholds (now processed on the whole product level and not on component-level assembly) intend to encourage real technology transfer, but experience uneven effects. At the end of the day, indigenisation is not merely a technical or industrial objective, it is, in fact, a strategic principle. It reframes India's status in the global order, allowing it to transition from importing defence technologies to co-producing them; from being a reactive ally, who waits for the United States to need its help, to an actor that collaborates with like-minded partners in shaping regional security. In a world where supply chains are weaponised, alliances are fluid, and the leverage of technological superiority as a prerequisite for strategic influence, India's capacity to develop, deploy, and export indigenous defence systems will define its geopolitical heft. In this context, "strategic autonomy" is not isolation; it is choice. It is the ability to think, engage, resist, and lead on India's own terms. Defence indigenisation forms the bedrock of that decision.

Conclusion

India's quest for defence self-reliance within the Atmanirbhar Bharat project has been a work in progress, and it has set the stage for a revolutionary leap of faith that aims to overhaul its military-industrial landscape, yet achieving those ambitions requires consistent effort, systemic re-jigging, and strategic certainty. The key to this change is the need for a commitment to long-term investment in defence R&D, which is currently underfunded compared to the global benchmark. In FY 2024–25, India set aside ₹23,855 crore for defence R&D (nearly 4% of overall defence budget), trailing behind countries such as South Korea, and the U.S. where more than 3.5% of GDP is spent on R&D. To bridge this gap, India will need to provide multi-year funding cycles, hone disruptive innovation and scale up programmes like the Long Term Directed Research Policy in DRDO which enabled focussed research through Centres of Excellence.

Just as essential is to advance academia-industry cooperation, which, despite some recent breakthroughs, still stands atomised. Institutions such as IIT Madras have already begun collaborating with defence think tanks and production agencies to co-develop strategic technologies, but this effort needs to be scaled nationally. Inspiring those people to take on the most complex problems in defence could work as a force multiplier; meanwhile, a vibrant ecosystem of academic programs, joint research labs and startup incubators can actually accelerate innovation, help to develop a highly skilled human capital base and ensure that the R&D isn't happening in silos within government. This requires not just financial resources but a cultural shift, fostering co-creation, knowledge exchange, and agile experimentation across sectors.

While strategic self-reliance is the ultimate goal, India also needs to foster indigenisation, along with selective strategic imports, particularly in domains where local capabilities are still in their infancy. Key systems, such as jet engines, semiconductors, and cutting-edge sensors, may still be sourced abroad in the near term. Still, procurement packages should prioritise the absorption of technology and co-development. The change in offset guidelines and FDI liberalisation, allowing up to 74 per cent under the automatic route, are steps in this direction. However, action on the ground needs to be monitored to ensure real capability transfer rather than just superficial assembly. The roadmap also features another pivotal pillar: institutional reform. Procurement inefficiencies and procedural delays persist despite the announcement of DAP 2020 and the corporatisation of the OFB, with such delays impeding timely execution and eroding industry confidence. An efficient acquisition cycle, digitisation of tenders, and providing real-time decision-making powers to PMUs can make contracting more responsive. To add to this, defence innovation must be integrated into the procurement logic and not seen as a post-facto event, but instead acted upon in terms of strategic requirements. This includes expanding emerging platforms, such as the iDEX, integrating MSMEs into the supply chain, and incentivising them with performance-linked incentives for indigenous design.

Lastly, India should shift from import substitution to compete globally with its defence exports. From ₹1,941 crore in 2014–15 to ₹23,622 crore in 2024–25 on the export front, the progress is encouraging but lopsided. For reaching the revised ₹42,800-cr target by 2025, India needs policies that foster exports and IP ownership in addition to branding Indian platforms as credible (cheaper) options in the global market. Defence diplomacy, regional friendships, and strategic marketing will have to supplement industrial efforts that urge India not just to be a self-reliant power, but also to be a global leader in defence.

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