

India's Defence Indigenisation Programme

Opportunities and Challenges

Rahul Wankhede*

INTRODUCTION

India's defence indigenisation mission, supported by the 'Atmanirbhar Bharat' vision, aims to reduce reliance on foreign arms imports by fostering a self-sufficient defence ecosystem. The Indian government has introduced several policies and programmes to promote this shift. These efforts seek to enhance private sector participation, promote defence research and development, and create conditions for indigenous production. India's defence expenditure has steadily risen, providing a substantial domestic market for indigenous solutions. However, achieving true self-reliance also requires addressing deep-seated technological gaps, strengthening industrial capabilities and expanding the global export footprint.

As India aims to strengthen its defence capabilities through self-reliance, a range of government policies and initiatives have created significant opportunities for indigenous development, fostering a new wave of innovation and investment in the defence sector. The subsequent section elaborates on this aspect.

* Mr Rahul Wankhede is a Research Analyst at the Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA), New Delhi, India.

OPPORTUNITIES FOR INDIA'S DEFENCE INDIGENISATION

Government Policies and Initiatives

The biggest opportunity in terms of indigenous research, development and the final sale of products has been created in the Indian defence industry by virtue of numerous government policies and initiatives launched since 2011. This started with the Defence Production Policy 2011, formulated with the objective of achieving

substantive self-reliance in design, development and production of equipment/weapons systems/platforms required; to create conditions conducive for the private industry to take an active role in this endeavour and to enhance potential of SMEs in indigenization to broaden the defence R&D base of the country.¹

The next initiative was the Defence India Startup Challenge (DISC) launched by the Ministry of Defence (MoD) and NITI Aayog for Innovations for Defence Excellence (iDEX) scheme in August 2018,² that called for proposals “to address specific technological needs of the Indian defence establishment”. Selected firms and individuals were awarded financial assistance strictly on a milestone basis in the form of grant/equity/debt/other relevant structures, along with incubation and mentoring support. DISC has gone through seven successful editions,³ with multiple contracts being awarded.

The government released an improved Defence Acquisition Procedure (DAP)-2020 which gives priority to the procurement of capital items from domestic sources. Increasing the percentage of indigenised components in an end-product is a slow and gradual process that takes years. Keeping in view this factor, the DAP-2020 has adequately included provisions to encourage foreign direct investment (FDI) to establish manufacturing hubs, both for import substitution and exports while protecting the interests of Indian industry.⁴ According to the revised DAP, the RFI process will assess the willingness of potential foreign vendors to gradually engage in manufacturing, and establish a local ecosystem for the production of spare parts and sub-components. The indigenous content (IC) requirement has also been increased to a minimum of 50 per cent in four out of five categories of the DAP-2020.⁵ The previous iteration of the DAP had a minimum of 40 per cent IC requirement.⁶ The Acceptance of Necessity (AoN) according authority has been given the flexibility to further vary this percentage, if needed.

This was followed by the release of ‘positive indigenisation lists’—five such lists have been released to date.⁷ These lists ban the import of listed items, after a cutoff date. Key initiatives to promote domestic defence production have included simplifying the industrial licensing process with longer validity periods, allowing 74 per cent FDI through the automatic route, and streamlining the ‘Make’ procedure. In 2020, the MoD launched the SRIJAN portal to promote indigenisation by the industry.⁸ Till 2022, 19,509 defence items had been uploaded on the portal for indigenisation, out of which, the Indian industry showed interest for the indigenisation of 4,006 defence items.⁹ In March 2024, a new scheme, called Acing Development of Innovative Technologies with iDEX (ADITI) worth Rs 750 crores, was launched under iDEX, to promote innovations in critical and strategic defence technologies.¹⁰ ADITI aims to develop around 30 critical and strategic deep-tech technologies within the planned timeframe. As a result of the above initiatives, the expenditure on defence procurement from foreign sources reduced from 46 per cent to 36 per cent, in the four years from 2018–19 to 2021–22.¹¹

India’s Defence Industry

India’s increasing defence budget, modernisation expenditure, and the huge domestic requirement of its military and other security forces, is the biggest available opportunity to develop indigenous defence solutions. India’s defence budget increased from Rs 3,59,000 crores in 2017–18 to Rs 6,21,940 crores in 2024–25.¹² In absolute terms, budgetary allocation under capital head to the defence forces for FY 2024–25 is Rs 1.72 lakh crore.¹³ About 25 per cent of this year’s defence budget has been exclusively reserved for the academia, industry and start-ups to assist them in research and development. Also, India’s defence exports reached an all-time high of Rs 15,920 crores in 2022–23.¹⁴ The government has set the target of manufacturing defence hardware worth Rs 1,75,000 crores, and take defence exports to Rs 35,000 crores by 2024–25. Thus, a lucrative opportunity exists wherein the slogan of ‘Make-in-India, Make-for-the-World’ can be translated into reality.

On the other hand, as India continues to be the biggest arms importer globally, a big opportunity exists in the form of import substitution, maintenance, repair and overhaul services. The current self-reliance rhetoric and ecosystem support has created a space for Indian manufacturers to provide solutions at a global level. For example, Indian companies have got orders from US defence majors to supply parts of platforms, like the F-16 fighter jets, Chinook and Apache helicopters, among others.¹⁵ Lockheed

Martin has picked up three Indian companies in 2019 under its 'India Innovation Growth Program', through which Lockheed mentors its partners to completely integrate them into the company's global supply chain.¹⁶

Initiatives and Support by Indian Armed Forces

The Indian armed forces have also been more forthcoming with their own design bureaus and innovation schemes to support the new innovators. The Indian Army has established Regional Technology Nodes to engage with industries, MSMEs, academia and start-ups for research and product development.¹⁷ The Army's support has thrown up many successful start-ups like Big Bang Boom, Johnnette Technologies, etc. The Indian Navy's Naval Innovation and Indigenisation Organisation (NIIO), in conjunction with the Defence Innovation Organisation (DIO), have collaborated under the SPRINT programme.¹⁸ This aims to develop and induct a minimum of 75 products into service under the scheme. The navy spent over 64 per cent of its capital budget on domestic procurement in 2021–22, and is expected to increase it to 70 per cent in 2023–24.¹⁹ This programme has already seen successful cases like Sagar Defence Engineering, Newspace Research and Technologies, etc. The Navy now plans to induct 118 indigenous technologies, like autonomous swarms, unmanned underwater vehicles, smart torpedoes, etc.²⁰

The Indian Air Force (IAF) has been actively involved in various indigenisation initiatives aimed through the iDEX challenges, and the Mehar Baba Competition (MBC). The IAF nurtured start-ups through the multi-phased MBC, and a Rs 300 crore contract was signed for swarm drones with the final winner in August 2023.²¹ The 350th iDEX contract was signed in March 2024, between the IAF and SpacePixxel Technologies Pvt. Ltd for the design and development of a miniaturised satellite.²² Ongoing IAF projects of LCA Tejas, and its subsequent iterations, have been supported by many Indian companies. Subject experts say that the development of LCA Tejas has helped create an indigenous aerospace ecosystem in India.²³ The Indian armed forces are known for their stringent procurement criteria, which means that meeting these high standards can serve as a strong endorsement of a product's quality and capability. However, competing with global Original Equipment Manufacturers (OEMs) requires not only meeting these tough standards but also addressing other factors, such as cost, technological innovation, and after-sales support. Success in meeting these rigorous criteria can enhance credibility and marketing potential, but it also necessitates navigating the competitive landscape of global defence markets.

Growing Demands for Non-Chinese Alternatives

Growing concern over reliance on Chinese hardware, especially in security-use cases, presents opportunities for India to emerge as a reliable supplier of non-Chinese alternatives in hardware and firmware. India can capitalise on this global demand by offering indigenous solutions that adhere to international standards and security requirements. The US and the European Union, wary of Chinese hardware due to security concerns and the risk of embedded malware, have been seeking alternatives since the pandemic. With its strong reputation in IT and IT-enabled services, India is well-positioned to leverage this trust to develop secure hardware solutions for both local and global markets. If India adopts innovative products—like drones—as a part of its security and governance infrastructure, scale, increased capabilities and profitability will automatically happen. To facilitate this transition, the government could play a key role in creating a supportive environment by providing incentives and subsidies to mitigate the high capital requirements, in the absence of immediate orders. In turn, the private sector might be motivated to invest in developing these technologies, driven by potential future contracts, market opportunities and long-term strategic benefits. This support can help make long-term strategic investments more appealing to the private sector.

While these opportunities signal a promising future for India's defence indigenisation, significant challenges remain, particularly in mastering critical technologies and navigating the complexities of a competitive global defence market. The following section elaborates on this aspect.

CHALLENGES FOR INDIA'S DEFENCE INDIGENISATION

Technological Challenges

India faces challenges in developing and mastering advanced technologies required for indigenisation. Even in the case of technology transfers from foreign companies, the Indian human resource is not always able to absorb the 'know-how' as well as the 'know-why' in many cases. Human and material capability gaps exist in critical areas, such as electronics, propulsion systems, mechatronics, semiconductors and chips, engines and motors, etc., thus necessitating collaboration with foreign partners.

Reliance on technology transfers and licensed production arrangements limits indigenous innovation, and poses challenges to strategic autonomy. "Under offset, we are acquiring technology from various countries through Foreign Direct Investment (FDI). But, like this, we cannot obtain best

technologies as countries never share their latest innovations".²⁴ This was one of the major issues why the Defence Technology and Trade Initiative (DTTI)²⁵ between India and the US could not fructify.

India's experience with joint ventures in defence technology has been mixed. While some, like the BrahMos missile and Barak missile systems, have achieved significant success in terms of technology sharing and avoiding issues related to licensing and royalty payments, others—such as the Fifth Generation Fighter Aircraft (FGFA) joint venture—have encountered setbacks. These limitations underscore the inherent challenges of joint ventures, including matching investments, technology pricing, and the ability to align strategic objectives. Addressing these issues is crucial for the successful implementation and sustainability of future joint ventures. In the medium term, foreign collaborations will remain essential, even at high costs, until India develops sufficient research and industrial capabilities in critical sectors.

Industry Issues

The Indian defence industry, apart from public sector units, is dominated by a few large private conglomerates. These companies, well-established in civilian sectors, have ventured into defence production as part of their diversification strategies. They have been attracted by government incentives, the growing demand for indigenous defence production, and opportunities in strategic national interests. However, their financial stability, which does not rely solely on defence orders, creates a competitive environment in which smaller companies, focusing exclusively on defence, struggle to survive. This raises a critical question: should the defence sector or the government take specific steps to support these smaller firms? Without targeted measures, these companies are unlikely to thrive in a market dominated by established giants.

Out of the one crore or so MSMEs in India, more than 95 per cent are in the micro category,²⁶ that is, units having less than five crore turnover per year. Thus, MSMEs solely relying on defence contracts will not be able to withstand the pressures, dynamics and demands of the defence industry. They need to team up with bigger companies, focus on export orders, and keep providing for the civilian market for sustained growth.

Globally, around 90 per cent of start-ups fail,²⁷ and India's start-ups will be no exception. While the country is witnessing a surge in defence start-ups eager to tap into the self-reliance drive and benefit from government schemes, many may struggle to survive in the long term. High entry-level barriers,

such as limited funding, complex procurement processes and competition for a small pool of contracts pose significant challenges. If these hurdles are not addressed, the start-up ecosystem risks becoming overcrowded, with too many companies vying for limited opportunities, which could dilute innovation and weaken the indigenisation push.

Currently, many Indian companies are stuck with importing and assembling the products. Many of them import components (even from China, through other countries), assemble them in India, and sell them as 'made-in-India' products (commonly known as white-labelling). From a supply-chain perspective, a shift has been made from the all-out imports of products to the import of components. But merely assembling components together, and passing them off as an indigenous item is a big threat, especially when such items are sold to Indian security agencies. Lastly, instead of production-linked incentives that encourage the assembly of products, design-linked incentives need to be provided to these sectors to prevent the 'white-labelling' of products in the name of indigenisation. To enable this, the DAP-2020 mandates that the Intellectual Property Rights (IPR) must reside in India, with the agency selected for 'Make' projects. Apart from posing a big security risk, the white-labelling type of a business model will not survive in the long run. It is only the indigenously designed product, with the IPR held in India, that will succeed and sustain in the long term.

Supply Chain Vulnerabilities and Cost Challenges

Reliance on imported components, subsystems and critical technologies exposes India to vulnerabilities arising from disruptions in the global supply chain. Export controls, trade restrictions and technology denial regimes imposed by foreign countries disrupt indigenous defence production and capability development. While sanctions have encouraged innovation to some extent in India, the delay that happens in such cases is a severe limiting factor. Hence, joint ventures and diverse sources of import and collaborations are needed. This will also have an inevitable consequence of a huge mixed inventory in the hands of the Indian end-users.

'Make-in-India' initiatives will not be cost-effective always. Indigenisation and import substitution increase procurement costs for end-users, until the producer achieves economies of scale. Thus, the financial outlays needed for domestic procurements, and also for incentivising companies for defence exports, will have to be increased.

Global experience shows that defence budgets often fall short of the expectations set by demanding agencies. This raises an important question: should budgets be designed to achieve predefined capabilities within a set timeframe? Or, should capabilities be developed based on the funds actually available? A thorough analysis of these approaches is necessary to ensure that defence programmes are both financially feasible and capable of meeting strategic objectives.

India's Defence Exports and Competitive Global Defence Market

Self-reliance in the defence initiative cannot survive only on the basis of domestic demands. Sustained exports are, thus, the only way to thrive. To support this requirement, in November 2023, the Raksha Mantri approved a scheme providing financial assistance to Defence Attachés (DAs) for promoting the export of indigenous defence products from both the public and private sectors, supported by increased financial grants to Indian Missions.

Indian defence exports are currently dominated by low and medium technology products. Hence, it is essential that the Indian industry prioritises certain core sectors like engines, propulsion, micro-electronics, etc., over the others, to build innovative products that can cater to the Indian and global market.

The highly competitive global defence market is characterised by established players and emerging competitors vying for a market share. Intense competition, pricing pressures, lobbying and corruption from foreign suppliers pose challenges to India's efforts to establish itself as a leading player in the global defence market. Price and quality are, thus, the only metrics which can help Indian defence products survive at the global level.

Although it provides the best opportunity from an economic perspective, India has avoided selling lethal weapons to countries engaged in wars. With the increasing need to sustain defence exports and the domestic defence industry, will India be able to continue this stance? This question needs serious deliberations. As India aims to increase its defence exports, it is crucial to safeguard sensitive technologies. Completely avoiding technology transfer from India to the customer country may not be possible always. Therefore, a pragmatic approach involves implementing robust safeguards and agreements to protect sensitive information while still allowing for technology transfers. This could include negotiating terms that limit the dissemination of critical technologies, implementing secure collaboration frameworks, using verification and inspection mechanisms, etc.

CONCLUSION

India's defence indigenisation journey is at a nascent stage, driven by a series of strong policy initiatives, and government interventions aimed at reducing dependency on foreign imports. The increased involvement of private industry, start-ups and academia has led to some progress, as evidenced by a gradual reduction in defence imports, and an increase in defence exports. However, the realisation of the full potential of these initiatives is a long-term process. The impact of these efforts will only begin to fully materialise over the next several years, as the defence industry scales up, and technological capabilities mature.

India must also recognise that true indigenisation cannot be confined solely to defence. Rather than focusing narrowly on specific defence technologies, there is an urgent need to indigenise broader technological sectors like electronics, semiconductors, quantum technologies and advanced materials. A cross-sectoral approach, where indigenous technologies are developed for both civilian and defence applications, will provide India the flexibility to adapt innovations for dual-use purposes. This holistic strategy is essential for fostering long-term strategic autonomy, and ensuring that India's defence indigenisation efforts are integrated into a broader national security strategy. Only then can India effectively meet the future demands of both its domestic and global civil as well as defence sectors.

NOTES

1. 'Strategy For Defence Exports', Department of Defence Production, Ministry of Defence, Government of India, 2011, available at <https://www.ddpmod.gov.in/sites/default/files/STRATEGY%20FOR%20DEFENCE%20EXPORTS.pdf>, accessed on 31 August 2024.
2. 'Defence India Startup Challenge Deadline Gets Extended', Press Information Bureau, Ministry of Defence, Government of India, 24 September 2018, available at <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1547093>, accessed on 4 September 2024.
3. 'DISC 7', Department of Defence Production, Ministry of Defence, Government of India, 23 August 2022, available at <https://www.ddpmod.gov.in/sites/default/files/STRATEGY%20FOR%20DEFENCE%20EXPORTS.pdf>, accessed on 31 August 2024.
4. 'Defence Acquisition Procedure 2020', Department of Defence Production, Ministry of Defence, Government of India, 14 December 2020, p.10, available at https://www.mod.gov.in/sites/default/files/DAP2030new_0.pdf, accessed on 31 August 2024.

5. Ibid., p. 17.
6. 'Defence Acquisition Procedure-2020', Reference Note, Lok Sabha Secretariat, 30 September 2020, available at https://loksabhadocs.nic.in/Refinput/New_Reference_Notes/English/25012021_104531_1021205239.pdf, accessed on 31 August 2024.
7. Srijan Defence, '5th Positive Indigenisation List', Ministry of Defence, Government of India, 4 October 2023, available at https://srijandefence.gov.in/DMA_5thList.pdf, accessed on 4 September 2024.
8. 'Raksha Mantri Shri Rajnath Singh Launches Indigenisation Portal SRIJAN', Press Information Bureau, Ministry of Defence, Government of India, 14 August 2020, available at <https://pib.gov.in/PressReleseDetailm.aspx?PRID=1645805>, accessed on 4 September 2024.
9. Digital Sansad, 'Unstarred Question no. 4955 to be Answered on 1st April, 2022 Indigenization of Defence Sector', Lok Sabha Questions, 1 April 2022, available at <https://sansad.in/getFile/loksabhaquestions/annex/178/AU4955.pdf?source=pqals#:-:text=Ministry%20of%20Defence%20has%20also,4006%20defence%20items%20so%20far>, accessed on 4 September 2024.
10. 'DefConnect 2024: Raksha Mantri Launches ADITI Scheme to Promote Innovations in Critical & Strategic Defence Technologies', Press Information Bureau, Ministry of Defence, Government of India, 4 March 2024, available at <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2011171>, accessed on 5 September 2024.
11. 'Import and Export in Defence Sector', Press Information Bureau (Defence Wing), Ministry of Defence, Government of India, 19 December 2022, available at <https://www.mod.gov.in/sites/default/files/Rajya-Sabha%20-%20December-19-%202022.pdf>, accessed on 5 September 2024.
12. 'Demand For Grants 2024-25 Analysis', PRS Legislative Research, 31 July 2024, available at https://prsindia.org/files/budget/budget_parliament/2024/DFG_MoHUA_2024-25.pdf, accessed on 5 September 2024.
13. 'Rs 6.22 lakh crore Allocated to MoD, Highest Among Ministries, in Regular Union Budget 2024-25; 4.79% Higher than FY 2023-24', Press Information Bureau, Ministry of Defence, Government of India, 23 July 2024, available at <https://pib.gov.in/PressReleasePage.aspx?PRID=2035748#:-:text=In%20absolute%20terms%2C%20budgetary%20allocation,Allocation%20of%20FY%202023%2D24>, accessed on 5 September 2024.
14. Smruti Deshpande, 'India's Defence Exports Log All-time High of Rs 21,083 crore in FY 2023-24', *The Print*, 1 April 2024, available at <https://theprint.in/defence/indias-defence-exports-log-all-time-high-of-rs-21083-crore-in-fy-2023-24/2023295/>, accessed on 7 September 2024.
15. 'The Business of BrahMos: How India's Defence Exports Blasted Off', *The Economic Times*, 13 June 2023, available at <https://economictimes.indiatimes.com/news/defence/the-business-of-brahmos-how-indias-defence-exports-blasted-off/articleshow/100961603.cms?from=mdr>, accessed on 7 September 2024.

16. Rahul Wankhede, 'From Ideas to Action: The Role of Defence and Aerospace Startups in Strengthening India's National Security Industry', in Kuldeep Verma and Divya Dwivedi (eds), *The Quest for Strategic Autonomy: Indigenisation of Indian Defence Industry*, KW Publishers, New Delhi, 2024, pp. 192–216.
17. 'Army Launches First Technology Node at Pune', Press Information Bureau, Ministry of Defence, Government of India, 2 November 2021, available at <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1768902>, accessed on 10 September 2024.
18. 'Prime Minister Shri Narendra Modi Unveils "SPRINT Challenges" Aimed at Giving a Boost to Usage of Indigenous Technology in Indian Navy', Press Information Bureau, Ministry of Defence, Government of India, 18 July 2022, available at <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1842449>, accessed on 10 September 2024.
19. Ibid.
20. 'Indian Navy to Induct 118 Indigenous Technologies Soon', *The New Indian Express*, 18 September 2023, available at <https://www.newindianexpress.com/nation/2023/Sep/18/indian-navy-to-induct-118-indigenous-technologies-soon2616077.html#:~:text=Niche%20technologies%20are%20being%20progressed,Underwater%20swarm%20drones%20and%20more>, accessed on 10 September 2024.
21. Dinesh Kumar Pandey, 'Swarm Drones in India: A Growing Capability', Centre for Air Power Studies, 27 May 2024, available at <https://capsindia.org/swarm-drones-in-india-a-growing-capability/>, accessed on 21 September 2024.
22. 'Landmark 350th iDEX Contract Inked', Ministry of Defence, Government of India, 25 June 2024, available at <https://pib.gov.in/PressReleasePage.aspx?PRID=2028447>, accessed on 21 September 2024.
23. Arun Vishwanathan and Rahul Manohar Yelwe, 'India and Defence Exports: Prospects of India's Light Combat Aircraft (LCA) Tejas', *Journal of the United Service Institution of India*, Vol. CLII, No. 630, October–December 2022.
24. 'DefConnect 2024: Raksha Mantri Launches ADITI Scheme to Promote Innovations in Critical & Strategic Defence Technologies', n. 10.
25. Javin Aryan, 'The Defence Technology and Trade Initiative (DTTI): Lost in the Acronym Bowl', Observer Research Foundation, 10 December 2020, available at <https://www.orfonline.org/expert-speak/defence-technology-trade-initiative-dtti-lost-acronym-bowl>, accessed on 10 September 2024.
26. Statement by Smt Mercy Epao, Joint Secretary, Ministry of Micro, Small and Medium Enterprises, at the 3rd PHDCCI International Conference on Defence and Security, 21 March 2024, New Delhi.
27. Neil Patel, '90% Of Startups Fail: Here's What You Need To Know About The 10%', *Forbes*, 16 January 2015, available at <https://www.forbes.com/sites/neilpatel/2015/01/16/90-of-startups-will-fail-heres-what-you-need-to-know-about-the-10/>, accessed on 10 September 2024.