



India's Defence Modernisation

This editorial is based on "[How India's defence sector is shaping up?](#)" which was published in The Hindu Business Line on 31/01/2025. The article brings into focus India's position as the world's fourth-largest defense spender in 2023, highlighting a shift towards defense self-reliance with rising domestic exports and reduced reliance on foreign military imports post-pandemic.

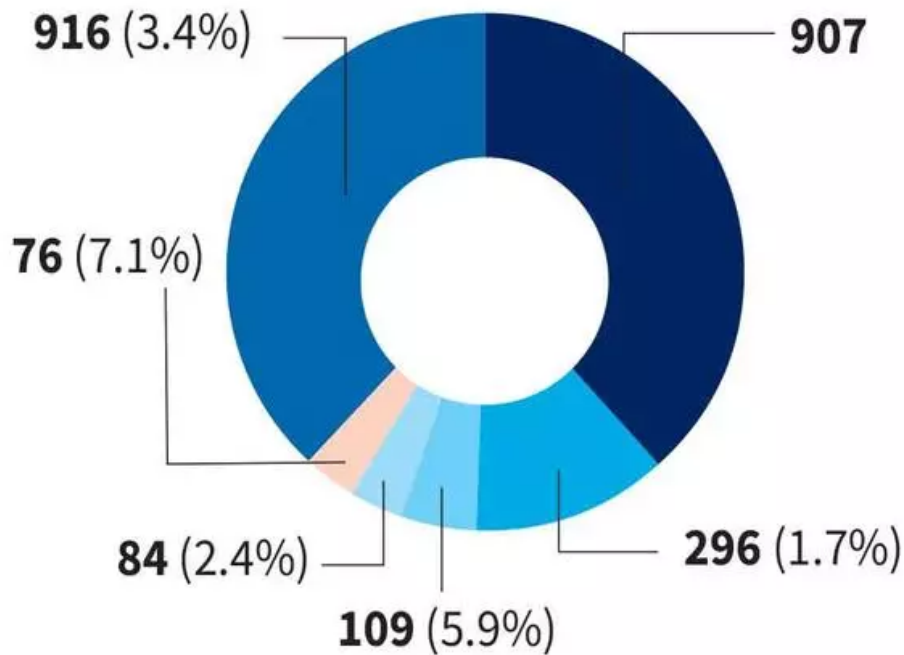
For Prelims: [India's defense landscape](#), [Defence Acquisition Procedure \(DAP\)-2020](#), [BrahMos missiles](#), [iDEX scheme](#), [Mazagon Dock Shipbuilders](#), [US-India INDUS-X](#), [Agni Prime missile](#), [Defense Industrial Corridors](#), [Defense Space Agency](#), [Positive Indigenization Lists](#), [CERT-In](#), [INS Vikrant](#), [S-400 missile systems](#), [Aatmanirbhar Bharat](#), [Chief of Defence Staff](#).

For Mains: Key Strides in India's Defence Modernisation, Key Issues Related to India's Defence Sector.

India maintains its position as the **world's fourth-largest defense spender in 2023**, following **only the United States' commanding lead in military expenditure**. The nation's strategic pivot is **evident in its robust capital outlay growth**, which outpaces other **defense segments**. Most notably, the post-pandemic era has marked a **transformative shift in [India's defense landscape](#)**- while dependency on foreign military imports has plateaued since FY22, domestic defense exports have charted an impressive upward trajectory. This dual trend of reduced import reliance and growing export capabilities signals a significant milestone in India's journey toward defense self-reliance and modernization. [//](#)

India is 4th in global military spending in 2023

● United States ● China ● Russia ● India
● Saudi Arabia ● Rest of the world *in \$ billion (Spending as % GDP)*



What are the Key Strides in India's Defence Modernisation?

- **Transforming Indigenous Defense Manufacturing:** India is strategically **transitioning to a self-reliant defense ecosystem** by bolstering indigenous production and reducing reliance on imports.
 - Policies like the [Defence Acquisition Procedure \(DAP\)-2020](#) mandate prioritization of domestic procurement, driving this transformation.
 - In 2023-24, domestic defense production hit a record ₹1.27 lakh crore, **a 16.7% rise from the 2022-23** and **75% of the ₹1,40,691 crore capital procurement budget for 2024-25 was reserved for indigenous products**, including advanced weapon systems.
- **Surge in Defense Exports:** India is rapidly emerging as a defense exporter, reshaping its global presence by providing cost-effective, high-quality weaponry.
 - Products like [BrahMos missiles](#) and [Pinaka rocket systems](#) have gained international recognition.
 - **Defense exports soared to ₹21,083 crore in FY 2023-24**, a 31-fold increase from a decade ago.
 - The government aims to further boost exports to **₹35,000 crore by 2025**, leveraging initiatives like the [IDEX scheme](#) to develop globally competitive technologies.
- **Strategic Defence Partnerships:** India is strategically partnering with global defense leaders to bridge critical technological gaps and co-develop advanced platforms.
 - The [Mazagon Dock Shipbuilders' collaboration with Thyssenkrupp Marine Systems for Project P-75\(I\) submarine](#) and the [US-India INDUS-X](#) initiative for co-developing AI and hypersonic technologies are examples of strategic collaborations.
 - In 2023, India and France agreed to jointly produce aero engines, demonstrating a commitment to high-tech indigenization.
- **Breakthroughs in Missile Technology and Tactical Systems:** India's missile programs exemplify its progress in achieving strategic autonomy and enhanced deterrence.
 - **The induction of the 'Pralay' tactical missile** provides battlefield flexibility against adversaries.

- Furthermore, the **successful tests of the Agni Prime missile in 2024**, with improved precision reinforce India's long-range strike capabilities, showcasing significant advancements in defense technology.
- **Expanding Defense Industrial Corridors for Regional Growth:** The establishment of **Defense Industrial Corridors in Tamil Nadu and Uttar Pradesh** exemplifies India's focus on regional development and manufacturing capacity.
 - These corridors aim to attract ₹20,000 crore in investments. Tamil Nadu's corridor alone is expected to have secured **₹11,794 crore in commitments as of 2024**, with major players like **L&T** setting up manufacturing units, driving regional defense innovation.
- **Focus on Space and Cybersecurity Defense:** India is integrating space and cybersecurity into its defense strategies to address emerging threats.
 - The establishment of the **Defense Space Agency** and the planned deployment of satellites for surveillance and communication reflect India's evolving priorities.
 - Gaganyaan mission in 2025 for potential military applications and **CERT-In's cybersecurity initiatives** to protect sensitive defense networks showcase readiness in non-traditional domains.
- **Implementation of Positive Indigenization Lists:** The government has accelerated indigenization by implementing **five Positive Indigenization Lists**, banning their import post-specified deadlines.
 - This initiative has driven innovation, with components like the **K9 Vajra artillery systems** and **LCA Tejas** parts now indigenized.
 - The success of these lists highlights India's ability to replace imports with high-quality domestic products, significantly reducing dependence on foreign suppliers.
- **Strengthening Anti-Piracy and Maritime Capabilities:** India is enhancing its naval power to address piracy and protect maritime interests, especially in the Indo-Pacific region.
 - The **induction of INS Vikrant**, India's first indigenous aircraft carrier, into the Navy in 2023 showcases growing maritime prowess.
 - Patrol vessels like the **Sumedha class** are regularly deployed to critical regions like the **Gulf of Aden**, reflecting India's commitment to regional security.

What are the Key Issues Related to India's Defence Sector?

- **Persistent Dependence on Imports:** India remains one of the **world's largest arms importers**, undermining its strategic autonomy in defense preparedness.
 - With an **11% share of total global arms imports**, India was the world's biggest importer of major arms in **2018-22**.
 - For instance, the ongoing Russia-Ukraine war has disrupted the **supply of S-400 missile systems**, exposing vulnerabilities in **India's dependency on external suppliers for critical assets**.
- **Delays in Procurement:** India's defense procurement process is marred by bureaucratic inefficiencies, resulting in significant delays in acquiring advanced weaponry.
 - The **Tejas Light Combat Aircraft (LCA)**, for example, took decades to move from concept to induction, highlighting systemic inefficiencies.
 - Similarly, the **Project 75(I)** submarine acquisition for the **Navy**, critical for countering China in the Indian Ocean, **has faced repeated delays, leaving operational gaps**.
- **Outdated Inventory:** A significant portion of India's defense inventory is outdated, compromising operational efficiency and combat readiness.
 - For instance, the **Indian Army's tank fleet still includes T-72 tanks**, which are over 40 years old and technologically obsolete.
 - Similarly, the **Bofors howitzers, inducted in the 1980s**, remain the mainstay of artillery, despite advancements in modern artillery systems.
- **Insufficient Indigenous Manufacturing Capacity:** Despite the push for self-reliance under the **Aatmanirbhar Bharat** initiative, India's defense manufacturing ecosystem remains underdeveloped, especially for critical technologies like engines and sensors.
 - For example, India still relies on **General Electric (GE)** for jet engines for its **LCA Tejas**, reflecting a gap in core technology capabilities.
 - **While defense production increased to ₹1.27 lakh crore in 2023-24**, it still lags behind global standards in terms of innovation.
- **Inadequate Budget for Modernization:** India's defense budget allocation, though increasing, is

- skewed toward revenue expenditure (salaries, pensions), leaving limited room for modernization.
 - Together, salaries and allowances at **30.68% and pensions at 22.7%, together**, account for **53.38%** of total defence expenditure under the current budget
 - Leaving **inadequate funds to address modernization needs** given the rapidly evolving security environment, especially in the Indo-Pacific.
- **Cybersecurity Vulnerabilities in Defense Infrastructure:** India's growing reliance on digital systems exposes critical defense infrastructure to cyber threats.
 - In 2013, reports indicated that **Chinese hackers breached DRDO's systems**, stealing sensitive electronic files related to the **Cabinet Committee on Security (CCS)** and transferring them to a server in Guangdong, China.
 - While initiatives like **CERT-In** aim to address such threats, India lags behind global peers like the **U.S. in cybersecurity readiness**, posing risks to sensitive data and systems.
- **Lack of Joint Command Structure:** The absence of a unified command structure hampers interoperability between the Army, Navy, and Air Force, affecting joint operations.
 - Despite the creation of the **Chief of Defence Staff (CDS)** in 2020, theater commands remain unimplemented.
 - For example, during the 2020 **Galwan Valley standoff**, a lack of seamless coordination among forces delayed optimal deployment strategies.
- **Weak Domestic R&D Ecosystem:** India spends less than **1% of its defense budget on R&D**, significantly lower than global standards.
 - Institutions like DRDO have struggled with delays in delivering key projects, such as the development of **Arjun tanks** and **Kaveri engines**, forcing reliance on foreign technology.
 - The gap in indigenous innovation is a critical roadblock to achieving technological independence.
- **Limited Skilled Workforce in Defense Manufacturing:** India faces a shortage of skilled personnel in advanced fields like **robotics, AI, and precision manufacturing**, which are essential for next-gen defense systems.
 - The **Skill India initiative**, though promising, has **not adequately addressed the specific needs of the defense sector**, slowing the growth of domestic manufacturing and innovation.
- **Geopolitical Challenges in Defense Diplomacy:** India's reliance on Russian arms poses risks amidst evolving geopolitical dynamics, especially with increasing U.S.-Russia tensions.
 - Simultaneously, India's maritime security remains under strain as **China expands its naval presence** in the Indian Ocean, including the deployment of surveillance vessels in the region.
 - Addressing these dual challenges requires robust diplomatic and defense strategies.

What Measures can India Adopt to Enhance Defense Modernisation?

- **Streamlining Procurement Processes for Timely Acquisitions:** India must reduce delays in defense procurement by revising and simplifying the **Defence Acquisition Procedure (DAP)-2020**, ensuring faster decision-making and contract finalization.
 - A single-window clearance system for acquisitions can help eliminate bureaucratic inefficiencies.
 - Implementing AI-driven procurement systems can further optimize timelines and enhance transparency.
- **Increasing Budget Allocation for Capital Expenditure:** Allocating a higher percentage of the defense budget to modernization is **essential to address critical capability gaps**.
 - Enhanced funding can expedite the induction of advanced platforms like the **LCA Tejas Mark II** and **S-400 missile systems**, crucial for maintaining technological parity with adversaries.
- **Strengthening Indigenous Defense Manufacturing via Schemes Integration:** Combining the **Make in India** and **PLI (Production Linked Incentive)** schemes can incentivize domestic manufacturing of critical technologies like **engines, avionics, and sensors**.
 - By linking these schemes, India can encourage private players and startups to co-develop cutting-edge technologies while reducing reliance on imports.
- **Expanding Global Partnerships for Technology Transfer:** India should deepen collaborations with technologically advanced nations to co-develop defense platforms.

- For instance, partnerships like the **India-US Defense Acceleration Ecosystem (INDUS-X)** have opened avenues for acquiring critical technologies like AI and hypersonics.
- Such collaborations can enable local production of advanced systems while addressing technology gaps.
- **Establishing Robust Cyber and Space Defense Capabilities:** Given the growing threats in cyberspace and outer space, India must prioritize the development of dedicated cyber defense and space command units.
 - Strengthening the **CERT-In** framework and enhancing partnerships with global leaders like the US in space warfare can address vulnerabilities.
- **Implementing Joint Theater Commands for Enhanced Interoperability:** India must fast-track the implementation of joint theater commands to integrate the **Army, Navy, and Air Force for seamless operations.**
 - Theater commands will enhance resource utilization and enable coordinated responses to challenges like the **China-Pakistan nexus.**
- **Leveraging Startups and MSMEs through the iDEX Scheme:** Expanding the scope of the **iDEX (Innovations for Defence Excellence)** initiative can bring innovative startups into the defense ecosystem.
 - Engaging over 200 startups has already led to the development of 14 viable technologies.
 - By linking iDEX with the **Defence Industrial Corridors, MSMEs can gain the infrastructure and support** needed to scale production of cutting-edge technologies like UAVs and precision-guided munitions.
- **Modernizing the Navy to Address Indo-Pacific Challenges:** India should prioritize the modernization of its naval fleet to counter China's growing influence in the Indo-Pacific region.
 - The induction of platforms like **INS Vikrant** and future **Project 75(I) submarines** is essential for maintaining maritime dominance.
 - Boosting naval capabilities can also support India's **SAGAR (Security and Growth for All in the Region)** vision by ensuring the security of critical sea lanes.
- **Enhancing Export Capabilities through Focused Policies:** India should aim to become a major defense exporter by focusing on globally competitive platforms like the **BrahMos missile** and **Akash air defense systems.**
 - Streamlining the export approval process and engaging with global buyers through defense expos can expand India's market share.
 - Achieving the **₹35,000 crore export target by 2025** will also enhance India's defense industry's global reputation.
- **Developing Skill Ecosystems for Defense Manufacturing:** India must invest in creating a skilled workforce specializing in robotics, AI, and advanced manufacturing for defense production.
 - Linking the **Skill India Mission** with the defense sector can address this gap by creating dedicated training programs.
 - For example, upskilling initiatives in the **Defence Industrial Corridors** of Tamil Nadu and Uttar Pradesh can ensure a steady supply of skilled workers.
- **Focusing on R&D to Foster Indigenous Innovation:** Increasing R&D expenditure in defense to at least 5% of the budget can boost innovation and reduce dependency on imports.
 - Institutions like **DRDO should be partnered with private firms** for co-development of critical technologies like jet engines and hypersonic missiles.
- **Promoting Green Technology in Defense:** Integrating green technologies into defense can reduce environmental impact and enhance operational efficiency. Initiatives like developing **electric-powered military vehicles** and energy-efficient bases can align with global sustainability goals.
 - Collaborations with domestic firms under the **SRIJAN portal** can further ensure that eco-friendly innovations are indigenously developed and deployed.

Conclusion:

India's defense modernization journey reflects a strategic balance between **strengthening self-reliance and embracing global partnerships.** Achievements like increased indigenous production, rising defense exports, and advancements in missile technology highlight significant progress.. The road ahead requires sustained focus on **innovation, interoperability, and adaptability to ensure comprehensive national security.**

Drishti Mains Question:

India's journey towards self-reliance in defence production reflects a strategic shift in its security and economic policies. Highlight the challenges faced and suggest measures to overcome them.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. What is “Terminal High Altitude Area Defense (THAAD)”, sometimes seen in the news? (2018)

- (a) An Israeli radar system
- (b) India’s indigenous anti-missile programme
- (c) An American anti-missile system
- (d) A defence collaboration between Japan and South Korea.

Ans: (c)

Q. In the context of the Indian defence, what is ‘Dhruv’? (2008)

- (a) Aircraft-carrying warship
- (b) Missile-carrying submarine
- (c) Advanced light helicopter
- (d) Intercontinental ballistic missile

Ans: (c)

Mains

Q. Foreign Direct Investment (FDI) in the defence sector is now set to be liberalized: What influence this is expected to have on Indian defence and economy in the short and long run? (2014)