Choice

India Defence Sector

Wings and Waves of Indigenization

August 2023

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Choice Equity Broking Private Ltd.

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Defence Initiation

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India Defence Sector - Wings and Waves of Indigenization

- Since 1962, the Government of India (GoI) has taken significant strategic steps to bolster the capability of the Armed Forces and enhance defence infrastructure to safeguard the nation's borders. Over time, India has evolved into a crucial market for defence equipment which led to a higher import burden. To reduce dependency on foreign suppliers and parts, the GoI has made remarkable strides in developing indigenous fighter aircraft, warships, missiles, tanks, submarines, and more. Furthermore, global geopolitical tensions have prompted India to become increasingly self-reliant and self-sufficient.
- India's remarkable progress is evident in its foreign exchange reserves, which have grown from ~$9.22 billion in 1992 to around ~$600 billion, and the GDP, which has surged from ~$288 billion to nearly $4 trillion in 2023, establishing the country as a powerful nation. Given the availability of ample funds and the implementation of various policies to modernize and upgrade the armed forces, the defence sector is poised for robust growth. The GoI's planned expenditure of $130 billion by 2025 is just the initial step in its mission to modernize the armed forces further. This creates a favorable environment for domestic manufacturing, as evidenced by the increase in procurement levels from 54% in FY19 to 68% in FY22, presenting vast opportunities for domestic players.
- Further, with ongoing efforts to improve aerial, land, and maritime capabilities and modernize existing fleets of aircraft and warships, a substantial portion of capital expenditure is expected to materialize over the next 5-6 years.
- We expect some of the large size investments in all three forces. Such as, In the Air Force, modernization and upgradation of Fighter Aircraft, Unmanned Aerial Vehicles (UAVs), various Radar programs, Advanced Light Helicopters (ALH), and more. The Army is likely to invest in Combat Vehicles, Infantry Combat Vehicles (ICVs), Light Machine Guns (LMGs), Anti-Tank Guided Missiles (ATGMs), Quick Reaction Surface Air Missiles (QRSAMs), Long Range Surface to Air Missiles (LSRAMs), UAVs, Battle Tanks, and Artillery Guns, etc. The Navy is expected to increase its current fleet such as Nuclear-Powered Attack Submarines (Project 75), Midget Submarines, INS Vishal, Project 18, Light-Weight Torpedoes, and other advancements.
- **These initiatives and programs are projected to create opportunities across the armed forces. We are quite positive about the expected opportunities, particularly in segments like Electronic Warfare, Avionics, Radars, Missiles, UAVs, and Fighter Craft. We believe that these segments will witness rapid indigenization adoption, leading to significant domestic manufacturing and export opportunities supported by favorable policies. We expect that companies under our coverage, such as Bharat Dynamics, Astra Microwave, Hindustan Aeronautics, BEL, and Data Patterns, will be the primary beneficiaries of these trends.**

Sectoral pecking order BDL, Astra, HAL, BEL, and DATA pattern

- **Bharat Dynamics Ltd**: We believe BDL will play a very crucial role to meet the demand of armed forces and the export market. We have a positive view on the stock supported by 1) a strong order book (8x of FY23 revenue); 2) an increase in the execution of large orders between FY24-26; 3) Make in India push and Export opportunity. We initiate coverage on the BDL with a target price of **RS.1,346 (32x of FY26E EPS)** with the rating of **OUTPERFORM.**
- **Astra microwave Products Ltd**: We like the growth story of Astra given the steps it has taken to move up the value chain from the sub-systems supplier to a system supplier (where opportunity size is huge) and has identified certain growth areas such as SATCOM systems, wind profiler radars, ground surveillance radars, Doppler weather radars, anti-drone systems, etc. Further strong order book and healthy product development pipeline provide healthy revenue growth opportunities. We initiate coverage on Astra with TP of **Rs. 451 (28x of Sep-25E EPS)**. Recommend rating **OUTPERFORM**.
- **Hindustan Aeronautics Ltd:** The company has healthy order inflows with an outstanding order book of Rs.820bn as on March 31, 2023, providing high revenue visibility in the medium to long term, while also indicating HAL's strong competitive and strategic positioning. Further, there is a strong visibility of future orders with new orders anticipated for LUH, LCH, Su-30, and HTT-40 in the near to medium term. We initiate coverage on with a TP of **Rs.4,345 (22X of Sep-25E EPS)**. **Recommend ADD.**
- **Bharat Electronics Ltd:** The company's healthy order book, which stood at Rs.656bn as of Mar-2023 (~3.7x of FY23 revenue), some of the major order includes Himashakti, Medium Power Radar (Arudhra), Air Defence Control & Reporting System (Akashteer), Lynx U2 systems, EW Suite for MLH Upgrade, DR118 for Su-30, Weapon Locating Radar (WLR), SARANG ESM etc. We initiate coverage on BEL with a TP of **Rs.144 (28x Sep-25E)**. **Recommend ADD**.
- **Data Patterns Ltd:** We believe DPL to witness a high growth phase trajectory over the next 3-4 years led by 1) Exploring new opportunities in the export market; 2) working in collaboration with domestic players; 3) expecting to participate in Rs20-30bn worth of contracts over 3-4 years; 4) new product development in Radar, EW, Communication and satellite; and 5) doubling the capacity. We initiate coverage on DPL with the TP of **Rs. 2,174 (38x FY26E EPS). Recommend NEUTRAL rating.**

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Section I: Global Defence Spending Trend

Rising global military spending

- Russia & Ukraine war and tensions in East Asia drive and tension across the world, it has been seen that there is an increase in global military spending, expenditure rose by 3.7% in real terms in 2022, to reach a record high of $2240 billion. Global spending grew by 19% over the decade 2013–22 and has risen every year since 2015. Russia's invasion of Ukraine was a major driver of the growth in spending in 2022. Military expenditure in Europe rose by 13% during the year, which was the largest annual increase in total European spending in the post-cold War era. The exceptional growth was largely accounted for by a substantial increase in Russian and Ukrainian spending, but many other European countries boosted their military budgets in 2022. Spending increased in parts of Asia and Oceania also contributed to global growth in 2022.
- Total global military expenditure increased by 3.7% in real terms in 2022, to reach a new high of $2240 billion. Military expenditure in Europe saw its steepest year-on-year increase in at least 30 years. The three largest spenders in 2022—the United States, China, and Russia accounted for 56% of the world total, according to new data on global military spending. In Central and Western Europe, Russia and Ukraine raise military spending as war rages on US spending rises despite high inflation in China and Japan lead continued spending increases in Asia and Oceania

Global military spending cross USD 2,200 billions

Source: Sipri, CEBPL

On going Conflicts around the World

- In the present epoch, humanity finds itself amidst one of the most peaceful periods in history. Nevertheless, tranquility does not signify an absolute absence of violence and conflict across the world. This reality is highlighted by an extensive network of bilateral land boundaries, spanning about 250,000 kilometers or 156,000 miles, that demarcate the territories of approximately 197 independent states and their dependent territories. Among these, nearly 70 regions were once colonies or overseas territories, contributing to a total of approximately 325 boundaries. Additionally, there are 400 bilateral maritime boundaries, but only around half of them have legal agreements in place.
- Within this intricate global context, it is essential to acknowledge the existence of ongoing conflicts in 27 different locations. The geopolitical landscape is shaped by a complex interplay of forces. On one hand, we witness a contracting sphere of influence associated with Western powers. On the other hand, there is a growing display of geopolitical assertiveness exhibited by both Russia and China. China's expanding military capabilities, Russia's newfound assertiveness, and the receding influence of the United States are collectively molding the formation of new power centers. Such a scenario bears the potential for escalation, underscoring the paramount importance of maintaining strong defense preparedness and strategic investments.
- Navigating through the intricacies of global geopolitics and comprehending the consequential implications for defense and security readiness demands an expository approach.

Source: Visualcapitalist, CEBPL

➢ **Territorial Dispute**
- Russia-Ukrainian War
- Nagorno-Karabakh Conflict
- Kurdish-Turkish Conflict
- Israeli-Palestine Conflict

➢ **Civil war**
- War in Afghanistan
- Syrian civil war
- Instability in Iraq
- Yemini civil war
- Libya civil war
- South Sudanese civil war

➢ **Interstates**
- U.S-Iran conflict
- India-Pakistan conflict

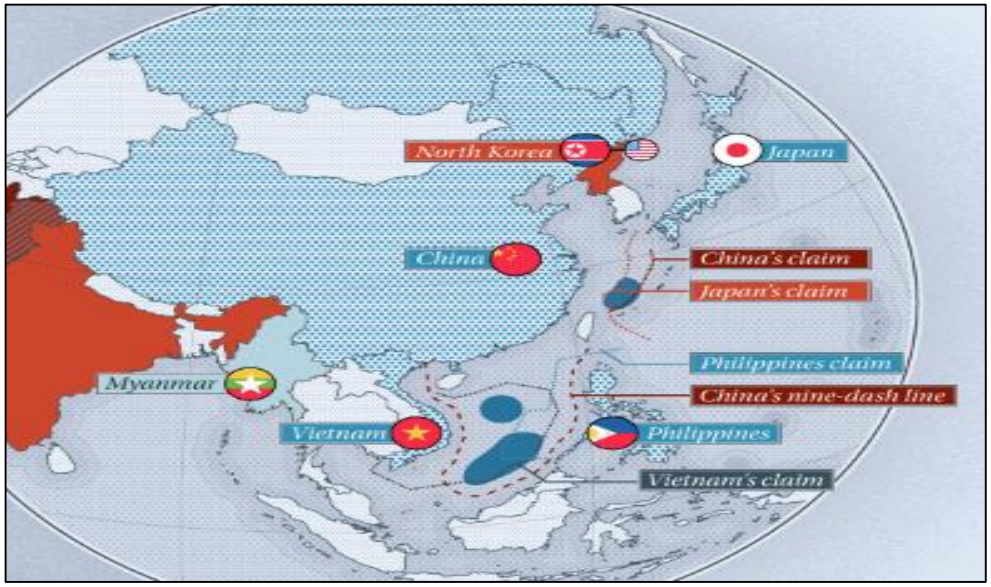
➢ **Political Instability**
- Instability in Lebanon
- Instability in Egypt
- Tigray war in Ethiopia
- Instability in the DRC

➢ **Transnational Terrorism**
- Mali war
- ISIS in Pakistan
- Al-Shabaab in Somalia & Kenya

➢ **Sectarian**
- Boko Haram Militancy in Nigeria
- Violence in the Central African Republic

Conflicts and Geopolitical Landscape in Asia and Africa led to keep the military spending on top priority

- In both Asia and Africa, conflicts have been persistent challenges that have shaped the geopolitical landscape of these continents. The reasons for these conflicts are often complex and multifaceted, ranging from historical grievances, ethnic and religious tensions, territorial disputes, and resource competition, to the geopolitical interests of external powers.
- In Asia, conflicts have been diverse and wide-ranging. For instance, the Indian subcontinent has witnessed longstanding tensions between India and Pakistan over the disputed region of Kashmir. Additionally, the rise of extremist groups in Afghanistan and neighboring regions has led to prolonged conflicts, with far-reaching implications for regional and global security. The South China Sea disputes involving multiple countries, including China, Vietnam, the Philippines, and others, have been a source of tension over territorial claims and access to critical sea routes.
- In Africa, the continent has experienced numerous conflicts that have had profound humanitarian, economic, and political consequences. Recent civil war in South Sudan and the conflict in the Democratic Republic of Congo (DRC), to the terrorist activities of groups like Boko Haram in Nigeria and Al-Shabaab in East Africa, the region has faced considerable challenges in maintaining peace and stability.
- These conflicts have resulted in significant human suffering, displacement of populations, and hindered socio-economic development. International efforts, including peacekeeping missions by the United Nations and regional organizations, have been deployed to address these conflicts and promote peace and reconciliation.
- Despite the complexities of these conflicts, there have also been positive developments in conflict resolution and peacebuilding in both regions. Diplomatic initiatives, mediation efforts, and peace agreements have offered glimmers of hope in some areas.
- As Asia and Africa continue to undergo political, social, and economic transformations, this will led to keep the military spending on top priority.



Source: Visualcapitalist, CEBPL

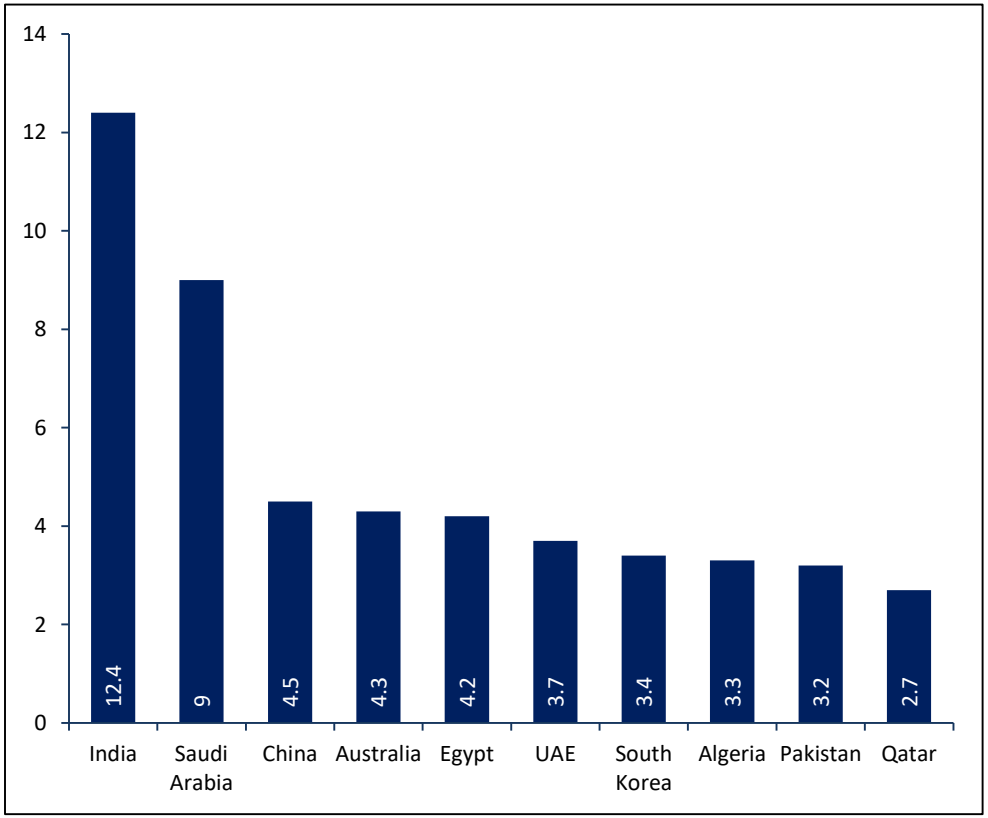
Source: Visualcapitalist, CEBPL

- **Territorial Dispute**
  - China and Japan
  - China and Vietnam
  - China and Philippines
- **Interstates**
  - North Korea crisis Sectarian
  - Rohingya crisis
- **Criminal Violance**
  - Mexico (around the mexican midterm election, 89 politicians were killed during the campaigning period).
- **Political Instability**
  - Venezuela

Top Importer of arms as % of Global Imports

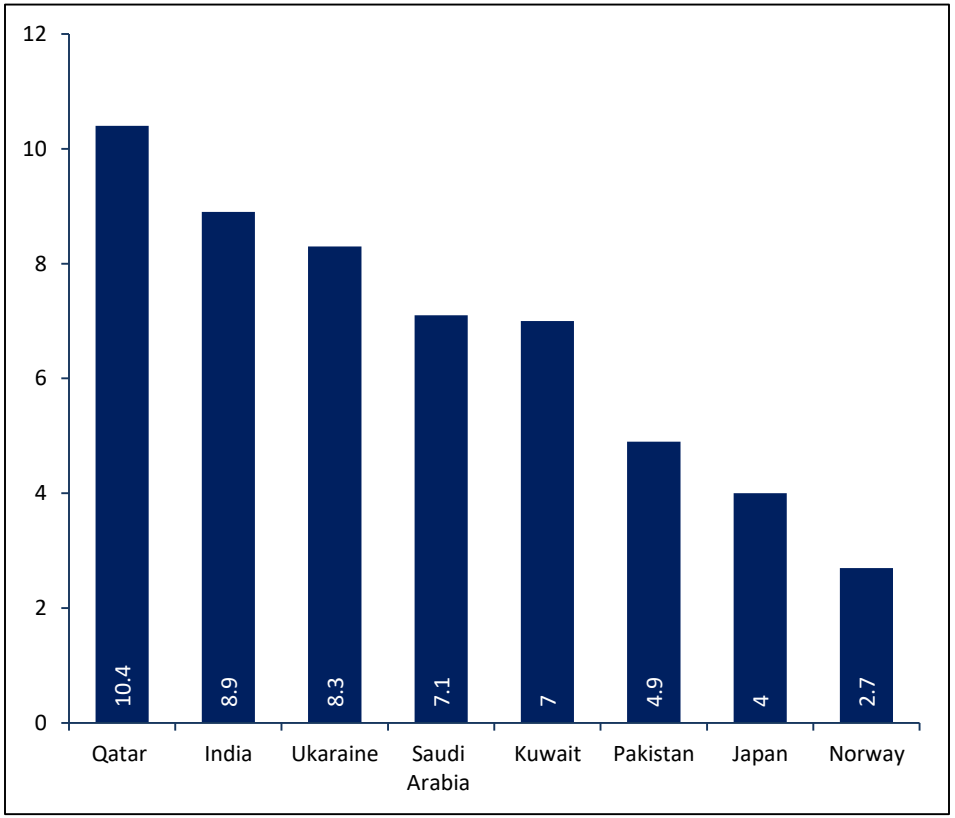
- Qatar was the world's biggest arms importer in 2022, according to data from the Stockholm International Peace Research Institute. Last year, its imports of weapons accounted for 10.4% of all global imports, even outpacing India (8.9%) and Ukraine (8.3%), which has been regularly supported with arms deliveries by an international alliance since the start of the Russian invasion last year.
- When looking at the main importers of arms over a five-year average (2018-2022), India was the biggest arms importer with a global share of 11%, followed by Saudi Arabia (9.6%), Qatar (6.4%), Australia (4.7%) and China (4.6%).
- In terms of the main exporters over that time, the top five were the United States (40% of the global share), Russia (16%), France (11%), China (5.2%), and Germany (4.2%).
- Regionally, Africa, America, Asia and Oceania, and the Middle East all saw a decrease from 2013-2017 to 2018-2022. Only Europe bucked this trend, with a 47 % increase in the flow of arms to the continent.

Top 10 Importer of arms as % of Global Imports between 2011-2021



Source: SIpri, CEBPL

Top Importer of arms as % of Global arms in 2022

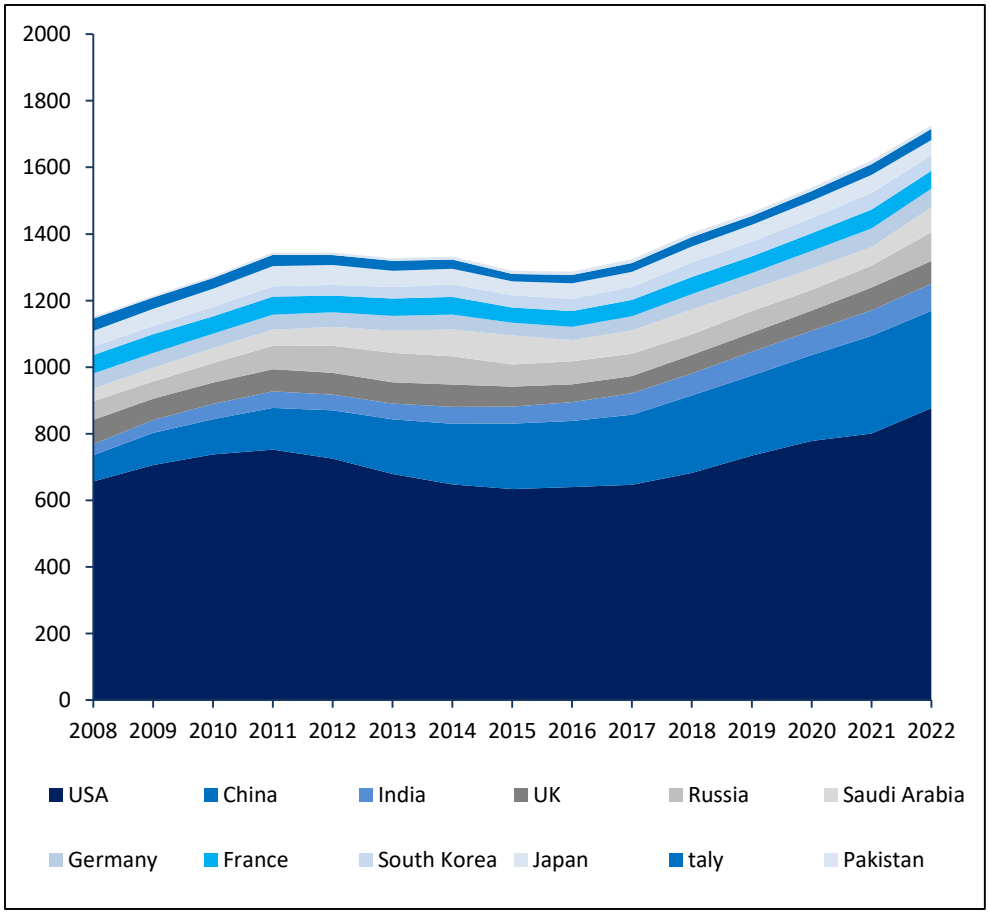


Source: Sipri, CEBPL

Top 10 countries with highest military spending

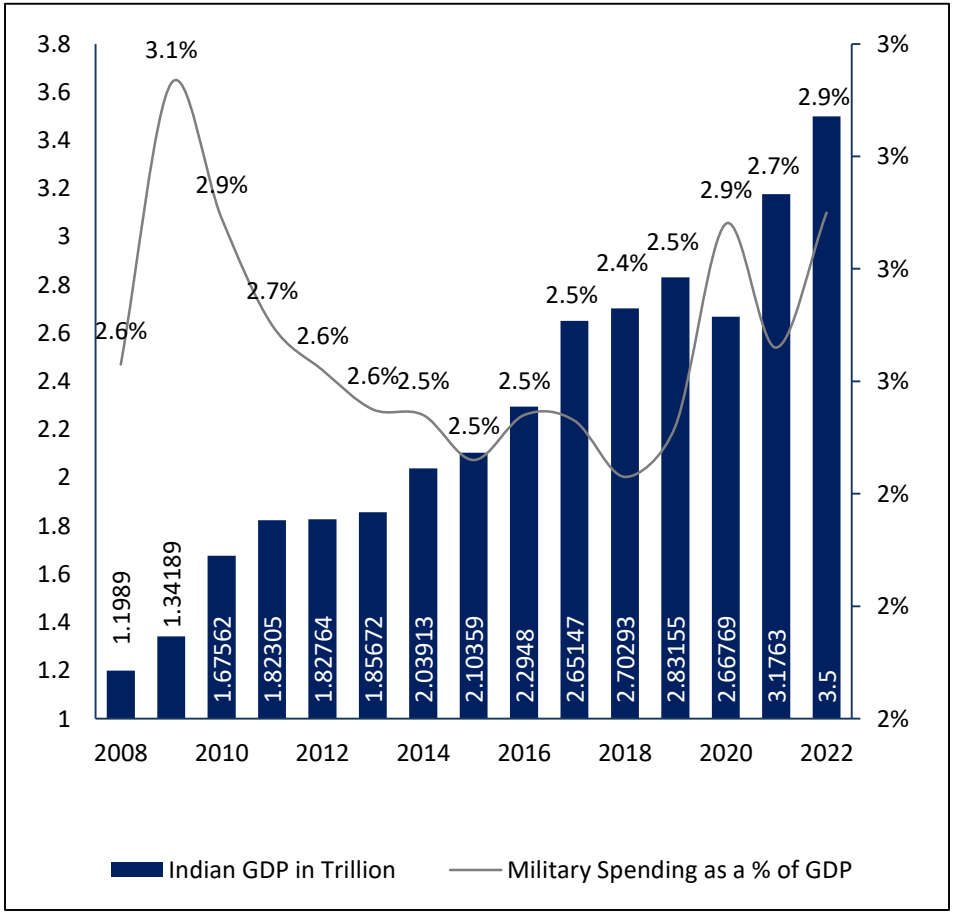
- New Delhi spent $81.4 billion on military in 2022, Beijing's expenditure was three and half times higher at an estimated $ 292 billion. Washington tops the list with an expenditure of $ 877 billion. The other two in the top five are Moscow ($ 86.4 billion) and Riyadh($ 75 billion).
- In percentage terms, this means USA (39%) and China (13%) account for more than half of the world's military spending whereas Russia (3.9%), India (3.6%) and Saudi Arabia (3.3%) together contribute less than 11%. India raised its defence spending by 6% from 2021 and 47% from 2013 consequent to the border tensions with China and Pakistan. Its expenditure on capital outlays that funds equipment upgrades for the armed forces and to the military infrastructure along its disputed border with China, amounted to 23% of total military spending in 2022," noted the SIPRI report.
- China, on the other hand, allocated an estimated $292 billion to its military in 2022, which was 4.2% more than in 2021 and 63% more than in 2013. China's military expenditure has increased for 28 consecutive years, the longest uninterrupted period of spending growth made by any country

Global Military spending ($Bn)



Source: Sipri, CEBPL

Indian GDP vs Military spending as % of GDP



Source: Sipri, CEBPL

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Section II: India- Defence Indigenization and Growth Driver

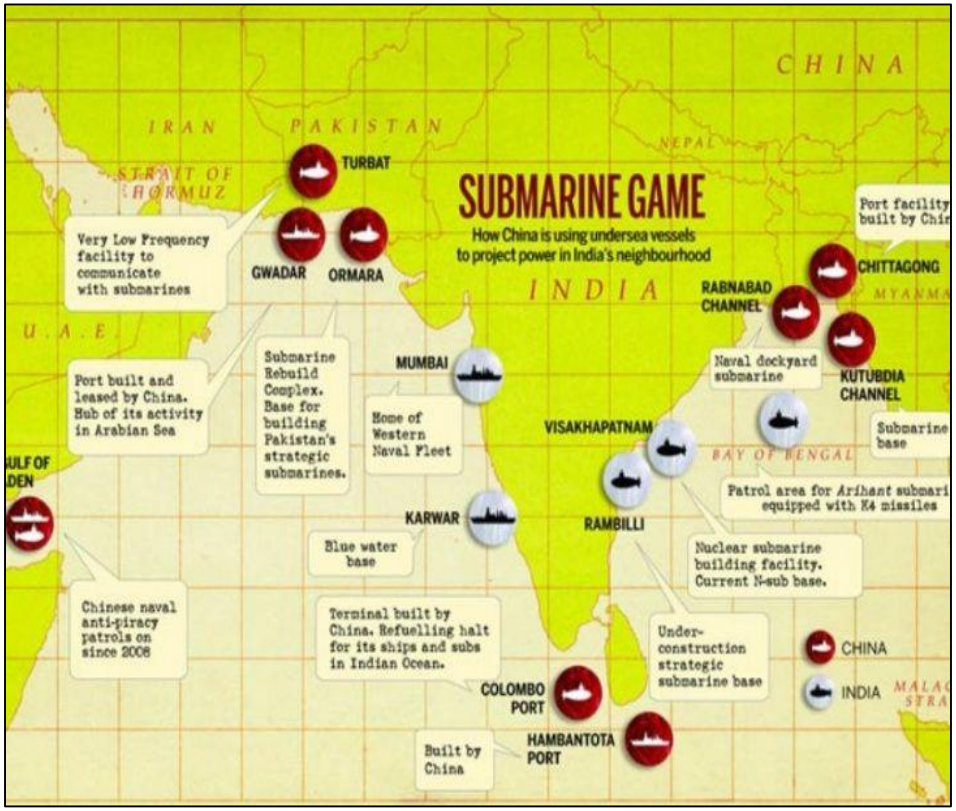
String of Pearls- Network of Chinese, Intentions to dominate in Indian Ocean Region

- 'String of Pearls' refers to a geopolitical theory to the network of Chinese intentions in India Ocean Region (IOR).
- Precisely, it refers to the network of Chinese military and commercial facilities developed by China in countries falling on the Indian Ocean between the Chinese mainland and Port Sudan. India's 'Look East Policy' was always seen as an answer to Chinese 'String of Pearls'.
- Apart from the Look East policy through which India has been trying to improve relations with China Southern-Eastern neighbours like Taiwan, South Korea, Philippines and Japan, India has been trying to improve its relationship with its neighbours so that they don't go and sit in the lap of China.
- To counter Chinese influence in Myanmar, India has recently extended over USD 1.75 billion in grants and credit to Myanmar. Prime Minister Narendra Modi has recently visited Bangladesh and also received his counterpart in New Delhi. All these moves are seen as key to counter China. India-Bangladesh is also likely to develop deep sea military infrastructure in Sonadia.
- In order to counter China's Gwadar move, India has made deal with Iran and now India is developing Chabahar Port in Iran which is even more crucial than Gwadar
- India has also invested a lot diplomatically in countries like Turkmenistan, Uzbekistan, Kyrgyzstan, Kazakhistan and Mongolia - all surrounding China. Besides, India has good old friends in Japan, South Korea and Russia.

String of Pearls

Source: CEBPL, media search

Using IOR to encircle India



Source: CEBPL, media search

India's Indigenous journey

- India has been pushing for greater indigenisation of military hardware as India imports around 70% (by value) of its high-tech defence hardware such as aircraft, ships, submarines, missiles etc. mainly from Russia, Japan, Israel and the United States. Delays in modernisation caused a major reduction in offensive capabilities of the Indian forces. Considering the escalating geopolitical scenario in the Indian subcontinent, process improvement and industry push mechanisms to accelerate defence procurements is expected. Most modernisation programmes are either totally indigenous or are planned to have a large indigenous component which will drive the indigenous growth. DRDO is the research and development agency which develops the indigenous programmes.

Evaluation of Indian defence industry

Stage 1
- Low technology dispersion
- Low R&D budgets
- Some assembly under license

Stage 2
- Increased budgets post wars in the 1960s
- Licensed production – Mig 21, T-72 etc.
- Relationship driven technological progress (limited)

Stage 3
- DRDO & DPSU led indigenous platform development
- Joint venture led development- BrahMos, FGFA, LRSAM

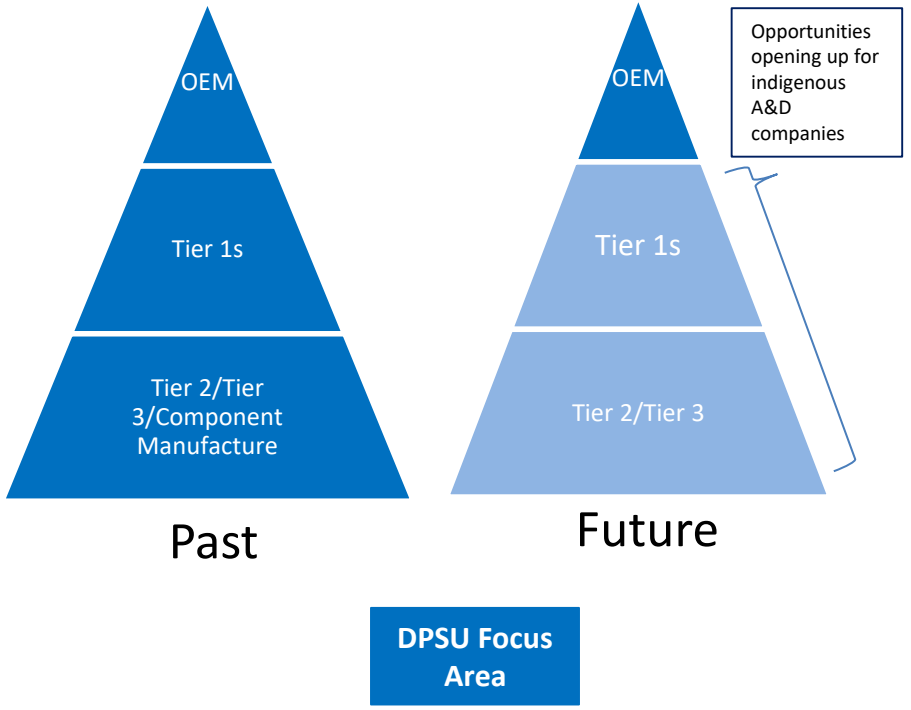
Stage 4
- Private sector opened up for defence production
- Offset mandates, FDI & increased emphasis on technology transfer
- Changes in defence procurement policy but limited impact

Stage 5
- Private sector led defence production
- Policy changes conducive to catalyse private participation
- Constant iterative changes

Source: Company, CEBPL

The Indian Defence Industry Evolution-1950 to current

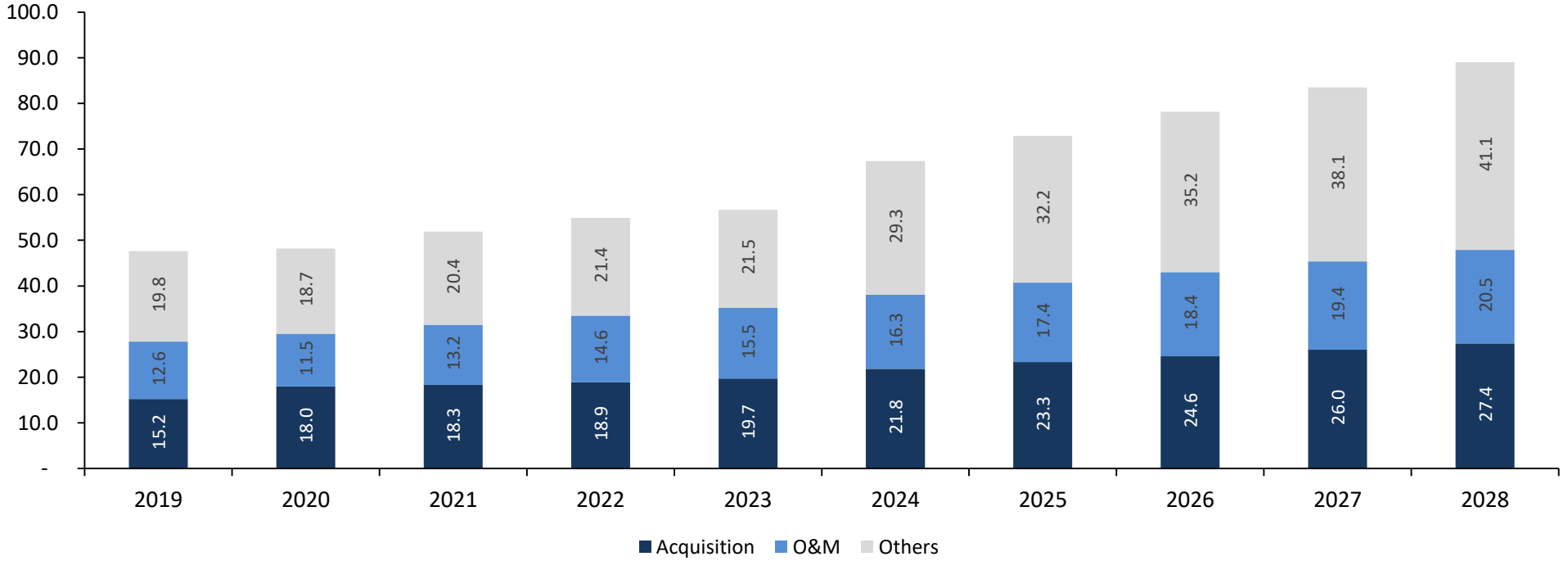
DPSU will focus more on platforms moving forward & will open up lower tier product development & integration to indigenous private companies



Source: RHP document, CEBPL

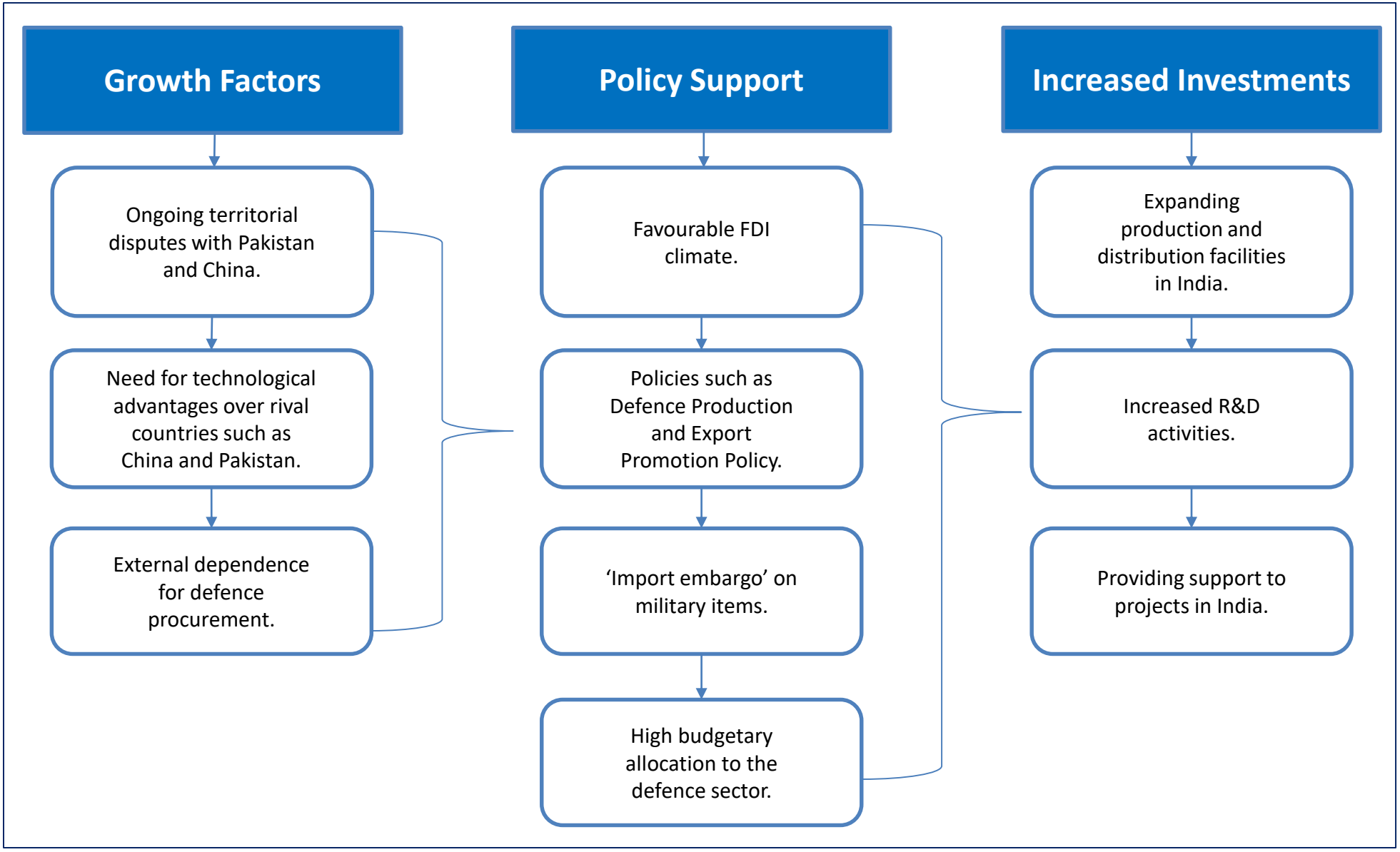
Indian Defence Budget Breakdown ($B), 2019-2028

- India's defense budget in 2023, excluding defense pensions, stands at $56.8 billion, an increase of 3.5% from the previous year. India is one of the fastest growing economies in Asia, and this economic growth has translated to increased defense spending. Additionally, security threats from both China in the Northeast as well as Pakistan to the Northwest have compelled India to maintain high levels of funding to maintain and modernize its military.
- India's defense budget is expected to increase from $67.5 billion in 2024 to reach a value of $89 billion in 2028. This growth reflects a CAGR of 7.2% of the period 2024-28. Concurrently, India's defense acquisition budget, which is valued at $19.7 billion in 2023, is anticipated to increase to $27.4 billion by 2028, reflecting a CAGR of 5.9% over the period 2023-28.
- Historically, pensions have taken up a large portion of India's defense budget. In 2023, pensions represented roughly 26% of India's defense spending, accounting for just under $19 billion. In 2022, India implemented the "Tour of Duty" program which is anticipated to alleviate the country's pension burden over time. It is estimated that India's pension spending will decline at CAGR of negative 9.6% over the period 2024-28. As such additional resources are expected to be freed up which could then be allocated to acquisitions funding in the future.
- Although the Indian government is unlikely to suddenly increase defense expenditure as a percentage of GDP the country is nevertheless expected to maintain an average defense expenditure of 2.22%.



Source: VEDP report, CEBPL

Growth Story



Source: Company, CEBPL

Domestic production of defence equipment

Enhancement in indigenous content under DAP 2020

- In order to reduce import dependence, the central government has notified three positive indigenisation lists comprising of 310 items which will be placed under staggered import embargo and procured from indigenous sources. In addition, DPSUs have released three positive indigenisation lists for 1,238 items out of which 266 items have so far been indigenised. The Defence Acquisition Procedure (DAP), 2020 seeks to enhance indigenous content in the manufacturing of defence equipment. DAP is applicable for the acquisition of capital goods and services. It also provides for leasing of assets as another category of acquisition which can substitute huge initial capital outlays with periodical rental payments. Among the categories listed in Table 10, Buy (Indian-IDDM) is given the highest priority in procurement. This is followed by Buy (Indian) and Buy and Make (Indian).
- Over the last few years, there has been a significant increase in defence exports which has been primarily led by the private sector. Between 2016-17 and 2021-22, India's defence exports increased at an average annual rate of 53%. The share of the private sector in defence exports increased sharply at an average annual rate of 114%. The Ministry of Defence has set a target of achieving defence exports worth Rs 35,000 crore by 2024

Exports of defence products (Rs crore)

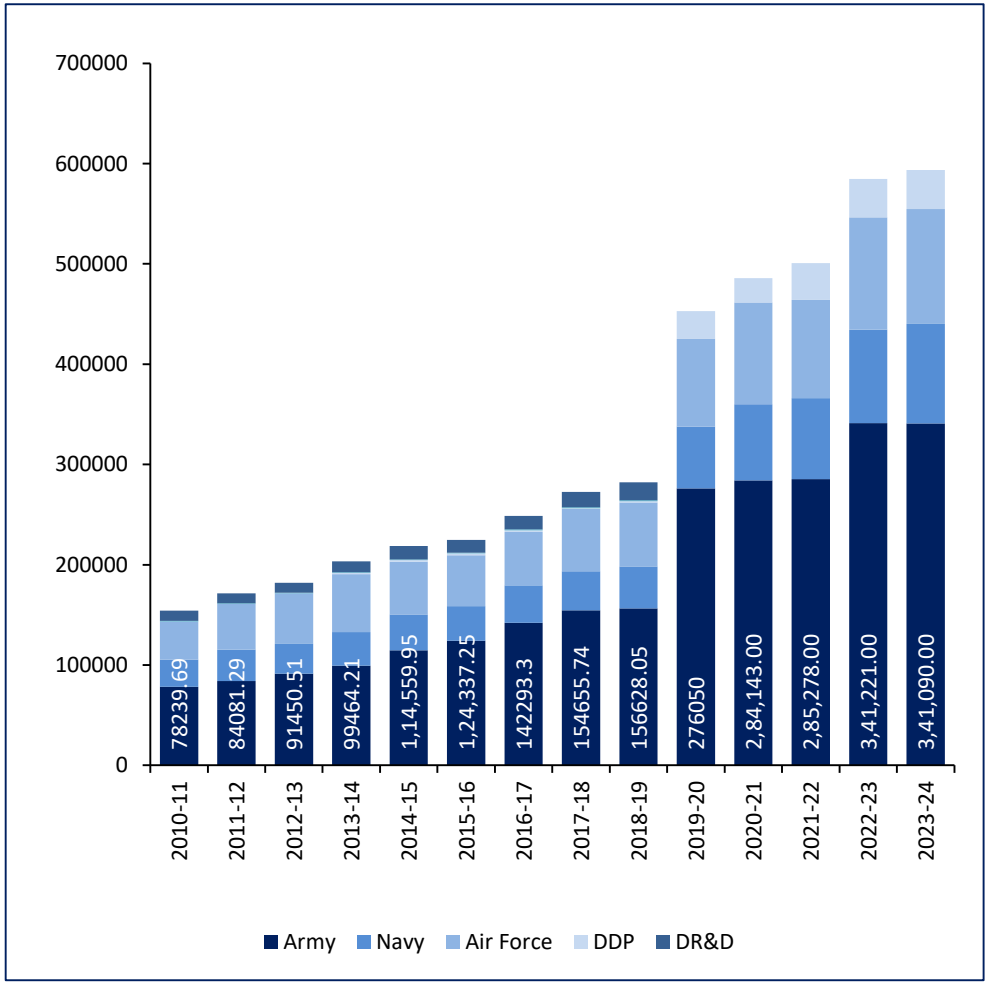
Year	Total Exports	Exports by Private Sector	% share
2016-17	1,521	194	13%
2017-18	4,682	3,163	68%
2018-19	10,746	9,813	91%
2019-20	9,116	8,008	88%
2020-21	8,435	7,271	86%
2021-22	12,815	8,800	69%

Source: DFG report, CEBPL

Service/ Department-wise Break-up of Defence Expenditure

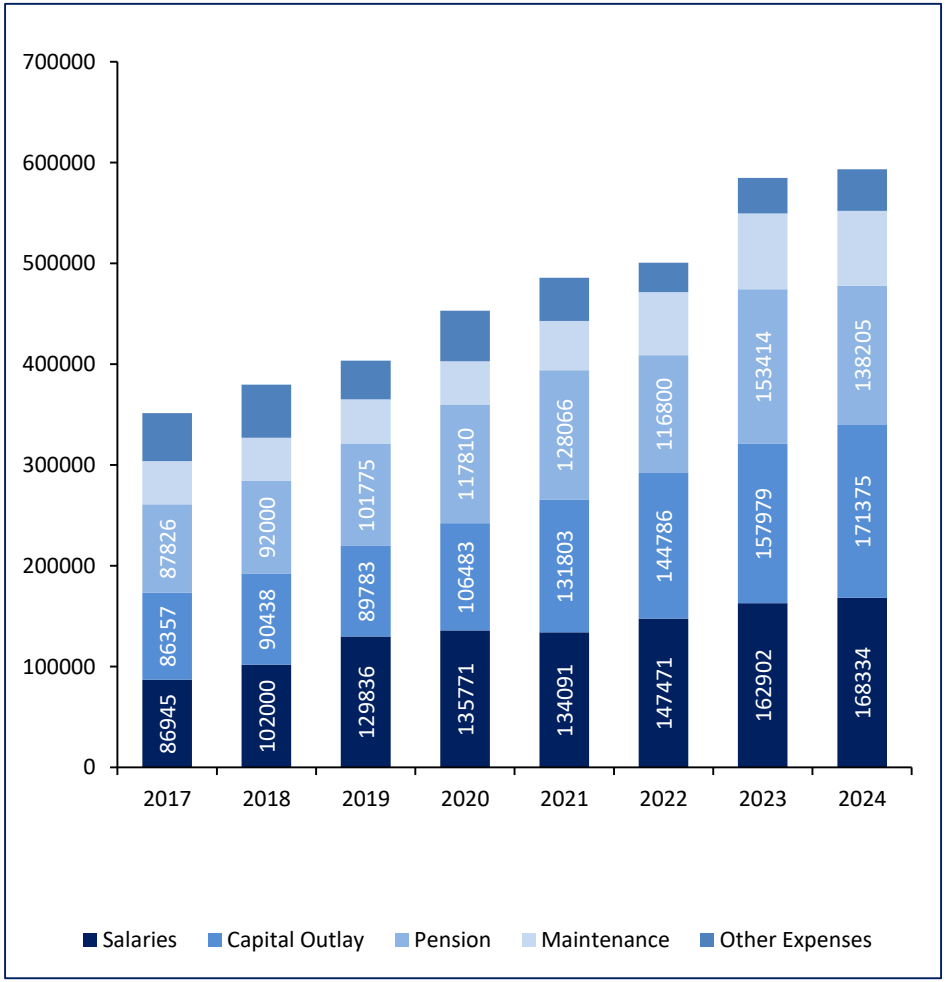
- **Defence Services (Revenue) allocations for the individual services for the period 2014–24:** The Army accounts for about 68% of the MoD's revenue budget in 2023–24 (BE), followed by the Air Force (at 17%) and the Navy (at 12%). The average annual share of the Army's revenue budget since 2014 has been at around 70%, while that of the Navy and the Air Force has been at 11% and 15.5%, respectively.

Service/ Department-wise Break-up of Defence Expenditure



Source: idsa report, CEBPL

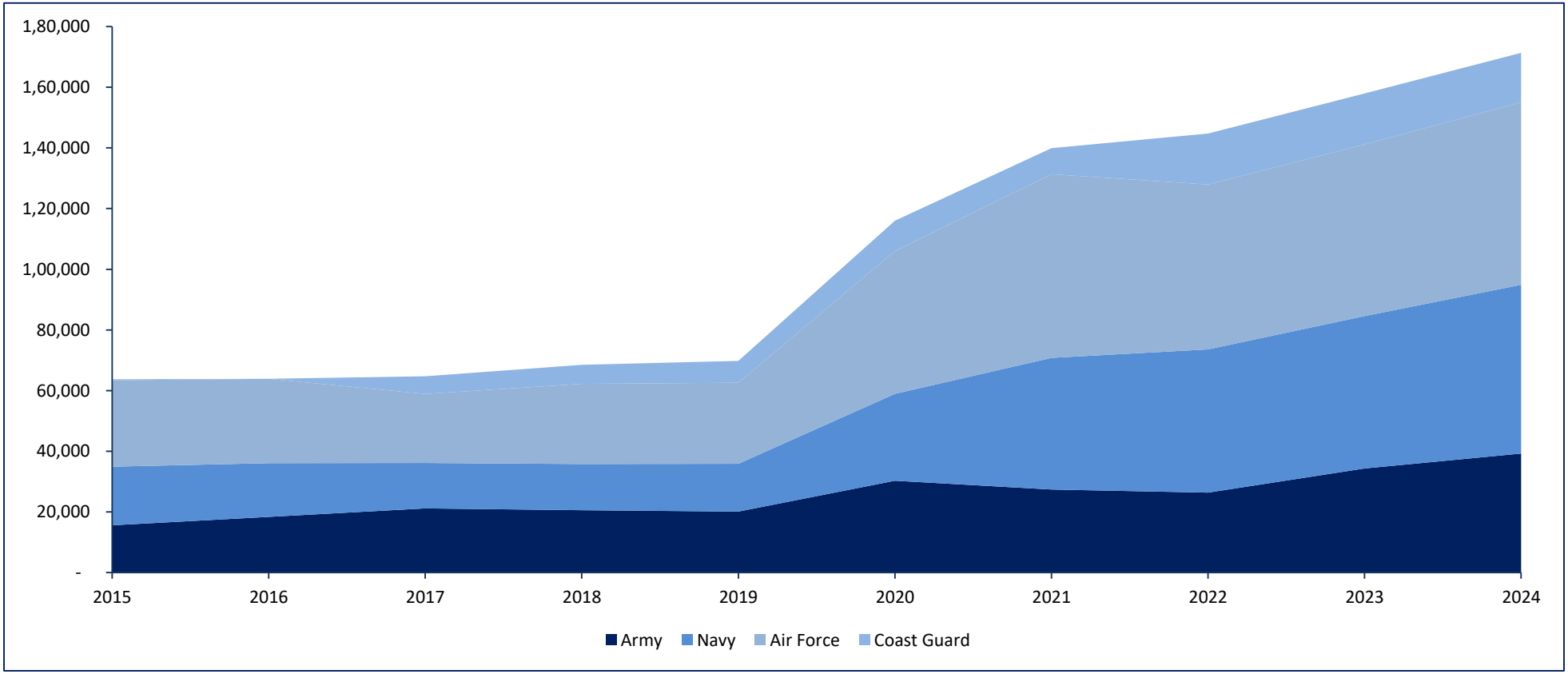
Defence budget allocation (in Rs crore)



Source: idsa, CEBPL

Capital expenditure of the armed forces break up

- In BE 2023–24, out of the capital outlay of Rs 37,214.54 crores to the Army, Rs 30,063 crores relates to what is termed as modernisation budget. The Army's modernisation budget constitutes 18.48% of the MoD's capital outlay budget. While the Army's modernisation budget as a percentage of MoD's capital allocations reached a high of 25.69 % in 2016–17, it has seen an average annual growth rate of 20% over the past 10 years, as against 36.8% for the Air Force and 26.7% for the Navy. In BE 2023–24, the Navy's modernisation budget stood at Rs 49,353.75 crores while that of the Air Force stood at Rs 52,892.72 crores, about 30.35% and 32.52% of the capital outlay budget respectively.
- What is noteworthy is that the Army's modernisation budget has seen a 48.6% jump in 2023–24 (BE), as against 2021–22 (Actual), from Rs 20,231.11 crores to Rs 30,063 crores. The Navy's modernisation budget has seen a 13.25% increase, while that of the Air Force has seen an increase of around 8%, during the corresponding time period.
- Adequate funds for the modernisation purposes of the armed forces has been a long running theme of debate. The MoD, in its submission to the 15th Finance Commission. in August 2020, had projected a capital budget requirement of Rs 3,46,130 crores and had expected an estimated allocation of Rs 1,76,346 crores in 2023–24. The 2023–24 BE capital allocation at Rs 1,62,600 crore is less than that estimated allocation by Rs 13,746 crores.



Source: idsa report, CEBPL

Defence Procurement Policy

- The Defence Acquisition Procedure (DAP) 2020 has been established in 2020 as a potential catalyst for the Atmanirbhar Bharat Abhiyaan, in the sector of defence manufacturing.
- The DAP eases the procurement and acquisition of upgraded technology, products and services for the Tri-Services and other allied defence services.
- The Defence Procurement Procedure (DPP) was first initiated in 2002 to streamline the procurement of military hardware for the Armed Forces in a systematic and time-bound manner.
- It was reformed in 2016, putting an emphasis on indigenously designed, developed and manufactured weapon systems and eventually moved towards self-reliance in the field of defence manufacturing.

Sl. No	Category	Indigenous Content (IC).
1	Buy (Indian-IDDM)	Indigenous design and ≥50%
2	Buy (Indian)	In case of indigenous design ≥50%, otherwise ≥60%.
3	Buy and Make (Indian)	≥50% of the 'Make' portion
4	Buy (Global-Manufacture in India)	≥50%
5	Buy (Global)	Foreign Vendor – Nil Indian Vendor ≥30%

Source: Company, CEBPL

Defence Procurement Policy

Category	Indigenous Content (IC).
Buy (Indian-IDDM)	▪ The equipment/system/platform is already in service, having been produced by Indian industry based on in-house R&D or through 'Make' scheme or developed. OR ▪ The equipment/system/platform is already in service, having been produced by Indian industry based on transfer of technology from a foreign vendor. OR ▪ Though not in service, but is available in Indian industry for some other sector. OR ▪ Though not in service, equipment/system/platform can be produced as all key technologies are available and Indian industry has capability to design, develop, manufacture, test and integrate the system. AND ▪ In case of upgrades of in-service equipment/system/platform, Indian industry has the requisite technology and capability to implement the upgrades sought, through one of the means detailed above. AND ▪ In each of the above situations, the Indian industry can deliver the equipment/system/platform with the stipulated indigenous content, firstly for trials and secondly for operational use as per indicated time schedule and In requisite numbers.
Buy (Indian)	▪ The equipment/system/platform is already in service, having been produced by Indian industry. OR ▪ Though not in service, but is available in Indian industry for some other sector. OR ▪ Though not in service, equipment/system/platform can be produced as all key technologies are accessible and Indian industry has capability to manufacture, test and integrate the system. AND ▪ In case of upgrades of in-service equipment/system/platform, technology is available to Indian industry, which has the capability to implement the upgrades sought, through one of the means detailed above. AND ▪ In each of the above situations, the Indian industry can deliver the equipment/system/platform with the stipulated indigenous content, firstly for trials and secondly for operational use as per indicated time schedule and in requisite numbers.
Buy and Make (Indian)	▪ The equipment/system/platform or the required upgrade is available with foreign OEMs (whether in service in foreign country or not). AND ▪ The foreign OEMs should be willing to provide Transfer of Technology (ToT) for indigenous manufacturing and provide Maintenance ToT (MToT), pertaining to critical technologies as per the specified range, depth and scope. AND ▪ Indian industry can absorb the technology and create the necessary production, test and integration facilities and poise for the up-gradation needed. AND ▪ Indian industry can deliver the equipment/system/platform with the stipulated indigenous content, for operational use as per indicated time schedule and in requisite numbers (graded approach for indigenous manufacture i.e. Fully Formed (FF), Semi Knocked Down (SKD) Kits, Completely Knocked Down (CKD) kits, Indigenous Manufacture (IM) kits).

Source: Media search, CEBPL

Defence Procurement Policy

Category	Indigenous Content (IC).
Buy (Global-Manufacture in India)	The equipment/system/platform or the required upgrade is available with foreign OEMs (whether in service in foreign country or not). AND The foreign OEMs should be willing to setup a subsidiary/JV/ToT to Indian PA with complete facilities for manufacturing of the entire/part of the equipment and spares/assemblies/sub-assemblies/Maintenance along with Repair and Overhaul (MRO) facility for the entire life cycle support of the equipment. AND The equipment/system/platform with the stipulated indigenous content, as per indicated time schedule and in requisite numbers can be affected by the OEM from the manufacturing facility in India.
Buy (Global)	1. The requirement of equipment/system/platform is not of strategic or long term nature which cannot be fulfilled through higher preference category; under this circumstance, the following may be ensured:- • Buy (Global) on multi or single vendor basis. • Fast Track Procedure in case of urgent operational requirements. 2. The requirement is of strategic nature and/or of long term nature. A single foreign vendor or all foreign vendors of the same country can provide equipment/system/platform; under this circumstance, the following may be ensured: • Buy (Global) under Government to Government arrangement. • In case of multiple vendors, product may be selected before approaching the foreign Government. • Conclude Inter Governmental Agreement if one does not already exist, as required. • Requirement of ToT/MToT as required/likely to be made available may be factored. 3. The requirement is of strategic nature and/or of long term nature. More than one foreign vendor from different countries can provide equipment/system platform; under such circumstance, the following may be ensured: • Buy (Global) on competitive bidding basis. • Involve the Government of L1 bidder if required. • Include ToT/MToT as necessary.

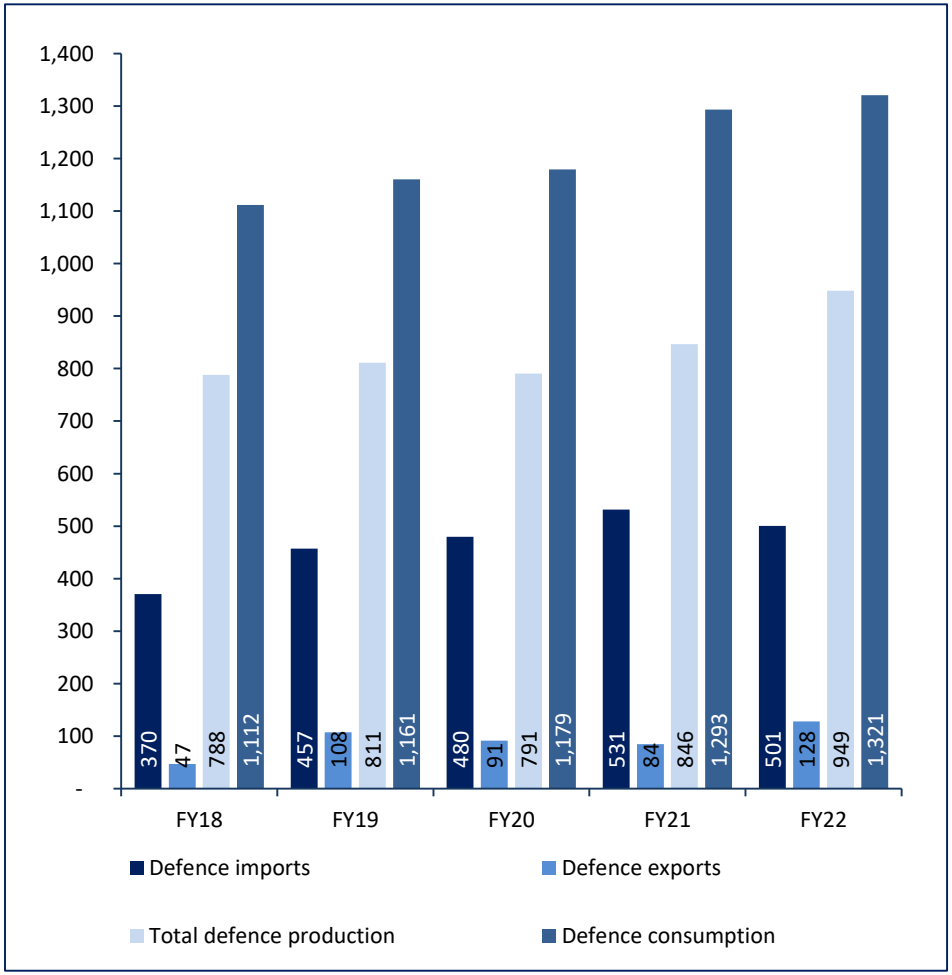
Source: Media search, CEBPL

Indigenization share gradually rising over last 10 years, Indian army indigenization share highest among the 3 divisions

- Over the last few years, the government has prioritized indigenous defence production and implemented several measures to encourage the domestic defence industry. These initiatives include raising the FDI limit to 74% from 49%, introducing DAP-2020 to focus on domestic procurement, promoting PILs, simplifying industrial licensing, implementing the iDEX scheme, establishing the SRIJAN portal, and reforming the offset policy and technology transfer.
- In fiscal year 2022, defence production in India amounted to ₹948 billion, showing a CAGR of 5.1% over the period from fiscals 2017 to 2022. The government expects this sector to grow at a faster pace, around 11.5-12.5% over fiscals 2022 to 2027, reaching ₹1,630-1,690 billion. The growth will be supported by various policies, a stronger involvement of the private sector, and the development of infrastructure, particularly with the establishment of defence corridors in Uttar Pradesh and Tamil Nadu. The government has set ambitious targets of $5 billion in exports and $22 billion in domestic defence production by 2025.

Year	Army		Navy		Air Force	
	Foreign (%)	Indigenous (%)	Foreign (%)	Indigenous (%)	Foreign (%)	Indigenous (%)
FY12	5	95	36	64	56	44
FY13	9	91	37	63	62	38
FY14	14	86	66	34	57	43
FY15	25	75	33	67	48	52
FY16	21	79	36	64	43	57
FY17	26	74	36	64	57	43
FY18	25	75	28	72	62	38
FY19	23	77	23	77	83	19
FY20	28	72	32	68	61	39
FY21	22	78	43	57	35	65
FY22	15	85	42	58	44	56

Source: Media search, CEBPL

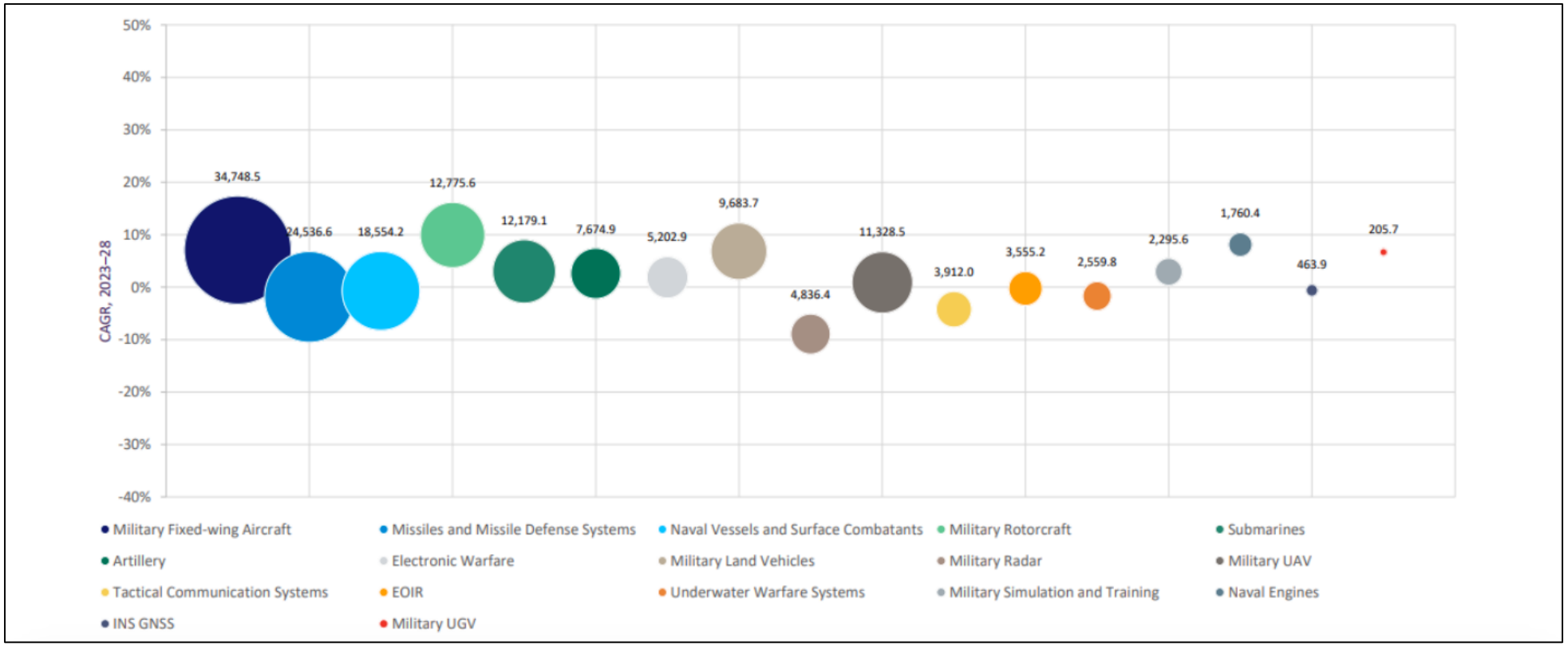


Source: Placement document, CEBPL

Future Aircraft Replacements: Tejas MK-2 and Medium Transport Aircraft

- To address the critical issue of falling squadron strength, the Indian Ministry of Defense (MoD) may order an additional 50 Tejas MK-1A fighters in the near term, bringing the total inventory to 123-133 aircraft. In the period between 2035-2040, there are further developments planned.
- The SEPECAT Jaguar will be phased out around 2024, and the IAF, along with HAL, plans to replace them with Tejas MK-2 fighters. The production of these fighters, however, is delayed and expected to begin sometime between 2027-2030.
- Military fixed-wing aircraft is the largest sector in terms of expected value, with a total market value of $34.7 billion, and it is projected to grow at a rate of 7.06%. The Indian Air Force (IAF) is at the forefront of the military's defense modernization efforts, with several planned programs contributing to this sector's value.
- Additionally, the IAF is investing in acquiring 70 HTT-40 basic trainer aircraft to expand pilot training. Simultaneously, the IAF is replacing its fleet of Hawker Siddley HS-748 transport aircraft with 56 modern Airbus C-295M light transport aircraft. Moreover, they have floated a tender for the acquisition of 40-80 Medium Transport Aircraft with a capacity of about 18-30 tons.

Market attractiveness for platform ($M), 2023-28



Source: Global data intelligence, CEBPL

Import ban creating a sustainable indigenization ecosystem

- Defence Indigenization Lists hold significant importance as they play a vital role in promoting strategic self-reliance and enhancing national security. By developing indigenous defense capabilities, India can reduce dependence on foreign suppliers, ensuring the availability of critical defense equipment even during uncertain geopolitical situations. Moreover, the indigenization process drives research and technological advancement, encouraging innovation within the domestic defense industry and beyond.
- Furthermore, indigenization efforts contribute to economic growth by creating jobs and stimulating the local defense industry. Producing defense equipment domestically can also lead to cost savings in the long run, as it reduces expenses related to imports and maintenance. Additionally, by relying on indigenous defense systems, India gain greater control over defense policies and decision-making, fostering strategic autonomy. Further successful indigenization can open up export opportunities and elevating a country's standing in the international defense market. Below are the Import ban list for indigenization list.

Defence Indigenization Lists

Timeline	Key Developments	Domain
Aug-20	Indigenisation list for 101 items: platforms & Systems	Platforms
May-21	Indigenisation list for 108 items: Systems, sensors, simulator, weapons & ammunitions	Platforms
Dec-21	Indigenisation list for 351 items: Subsystems, assemblies, sub-assemblies & components	Sub-systems/Components
Mar-22	Indigenisation list for identifying 18 platforms for industry-led design & development	Platforms
Mar-22	Indigenisation list for approval of 107 line: replacement units/Subsystems	Sub-systems/Components
Aug-22	Indigenisation list for approval of 780 Line Replacement units/Subsystems/Components	Sub-systems/Components
May-23	Indigenisation list for approval of 928 strategically-important LRU units/Subsystems, spares & components to be "made in India"	Sub-systems/Components

Source: Media search, CEBPL

Planned Acquisitions in the Indian Defense: Air Force and Coast Guard Upgrades

- The Indian Air Force (IAF) has several acquisitions planned, including six additional Netra AEWC (Airborne Early Warning and Control) based on the Airbus A321 platform. The Coast Guard is also expected to induct at least six units of C-295M aircraft in the maritime patrol variant, with a possibility of expanding the order in the future. Moreover, the IAF has released a tender for the acquisition of 40-80 Medium Transport Aircraft with a capacity ranging from 18 to 30 tons.
- In the Indian defense market, the Missiles and Missile Defense Systems (MDS) sector holds significant importance, valued at $24.5 billion between 2023-2028. The largest sub-sector within MDS is Platform based MDS, cumulatively valued at $16.6 billion. The Anti-Air Missiles sub-sector, inclusive of air-to-air and surface-to-air missiles, follows closely at $3.4 billion. The third largest sub-sector is Anti-Tank Guided Missiles (ATGM), with a cumulative value of $1.5 billion. The remaining segments, including Anti-Radiation Missiles, Anti-Ship Missiles, Conventional Land Attack Missiles, MANPAD, and Strategic Land Attack Missiles, make up the balance of $3.2 billion.
- Naval Vessels and Surface Combatants rank as the third largest sector in the Indian defense market, valued at $20.9 billion over 2023-2028. Frigates lead the sub-sectors within Naval Vessels and Surface Combatants, with a value of $4 billion. Corvettes follow as the second largest sub-sector with a valuation of $3.4 billion. The third largest sub-sector is Light Combat Vessel, including OPV (Offshore Patrol Vessels), Patrol Boats, and Missile Crafts, with a value of $3.1 billion over the same period

Top defense segments by value in millions of dollars

Segment	Sector	2023	2024	2025	2026	2027	2028	Total 2023-28
Combat Aircraft	Military Fixed-Wing Aircraft	2,334.9	3,029.0	3,422.7	3,246.4	3,404.4	3,465.8	18,903.2
platform based MDS	Missiles & Missile Defense System	2,700.8	2,909.2	3,289.9	2,805.1	2,285.7	2,562.6	16,553.3
Transport Aircraft	Military Fixed-Wing Aircraft	863.2	1,374.9	1,448.2	1,421.9	1,493.2	1,346.7	7,948.1
Main Battle tank	Military Land Vehicles	882.8	1,030.8	1,068.8	1,206.8	1,254.8	1,304.2	6,748.2
Transport & Utility Helicopter	Military Rotorcraft	606.0	963.9	989.5	1,006.4	1,047.5	858.1	5,471.4
ISR Aircraft	Military Fixed-Wing Aircraft	516.7	835.2	1,250.7	856.8	1,356.7	506.3	5,322.4
Loitering Munition	Unmanned Aerial Vehicles	397.0	1,958.3	2,117.5	175.7	147.0	189.1	4,984.6
MALE	Unmanned Aerial Vehicles	591.0	597.9	837.5	806.2	822.6	838.3	4,493.5
Self-Propelled Artillery Systems	Artillery	526.0	606.5	709.0	814.0	884.0	741.5	4,281.0
Nuclear-Powered Attack Submarines (SSN)	Submarines	708.2	750.2	808.5	854.2	516.2	576.2	4,213.5

Source: Global data intelligence, CEBPL

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Section-III Opportunity Across The Armed Forces

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Opportunities in Land Forces

Indian Army 4th Largest & strongest force in the world

- In the Global Power Index (GPI) of 2023, India's military is ranked fourth out of 145 countries. Pakistan, India's rival on the subcontinent, secured the seventh position, marking its entry into the top 10 after being ranked 13th the previous year. India maintained its fourth position consistently. Notably, other countries in the top 10 include established powers like the United Kingdom, France, Japan, and Germany, with Pakistan being closely associated with its ally, Turkey.
- China, referred to as India's "rival in the north," has been steadily advancing in the GPI over the last decade, catching up to Russia and India. It has already surpassed the United States in terms of its economic size and is determined to claim the top position in military strength and capability.

Indian Armed Force

Equipment's	India	Pakistan	China	2 front war short fall
Tanks	4614	3742	5750	4878
Armoured fighting vehicles	8600	8710	14130	14240
Total artillery	2799	6308	7094	10603
Self-propelled artillery	100	1225	2720	3845
Rocket artillery	960	1738	3140	3918

Source: Media search, CEBPL

Army Opportunities - Avenues to look for

- The Indian Army has a long list of equipment that is of foreign origin and has become obsolete. In order keep military equipment and platforms battle ready, the army is focusing on both indigenous capability and various procurement strategies to enhance its defence capabilities. Major procurement programmes for the army at various stages of completion are stated below:

Sl. No	Program name	Quantity	Current status
1	Future Ready Combat Vehicle (FRCV)	1,770	FRCV envisages the replacement of the Indian Army's fleet of Soviet-era T-72 tanks. The first of the new tanks are intended to enter service by 2030. 50% local mfg.
2	Futuristic Infantry Combat Vehicle (FICV)	2,610	A fresh RFI issued in June 2021
3	155mm mounted gun system	814	Seeking fresh AoN for acquisition
4	Auxiliary Power Unit (APU)	3,257	Army awards Rs. 1325 Crore Agreement to OshoCorp for Auxiliary Power Unit (APU) for T-72 & T-90 Tanks.
5	125mm APFSDS Ammunition for MBTs	85,000	AoN accorded on 13 Sept 2019. EoI stage.
6	7.62x51mm Light Machine Guns (LMG)	16,000	Contract under Fast track process from Israel
7	3rd Generation Anti-Tank Guided Missile (ATGM)	101 launchers, & 2,330 missiles	EOI issued in Feb 2020
8	Electronic fuses tech for rockets	20,000	Feasibility study
9	GPS/GIS based minefield recording system	3,680	Being fielded for AoN.

Deal value would be around $16-18bn

Source: KPMG research, CEBPL

Infantry Weapons

Expected Acquisitions and Upgrades of Infantry Weapons, 2021–31

Weapons System	Manufacturer	Expected Date of Acquisition	Notes
AK-203 assault rifle (7.62 x 39 mm)	Indo-Russian Private Limited (India and Russia)	2021	On 23rd November 2021, a deal was signed to replace the INSAS rifle as the primary firearm for the Indian Army. The deal is pending final approval from the Ministry of Defence (MoD) and the Cabinet Committee on Security (CCS). Upon approval, 671,427 units of the new rifle will be manufactured in India following the transfer of technology from Russia
Upgrade of Dragunov sniper rifle	SSS Defence (India) or Kalashnikov (Russia)	SSS Defence upgrades: Trials are underway with various Infantry units of the Indian military and paramilitary forces. Kalashnikov upgrades: Trials to start soon.	Indian Army's main sniper rifle since the 1990s needs an upgrade. The government included the upgrade in its "positive indigenization list," banning imports from December 2020. However, the manufacturer, Russia's Kalashnikov, claims exclusive rights for rifle modifications and offers its own upgrade package.
Joint Venture Protective Carbine (JVPC) (5.56 x 30 mm)	DRDO and OFB (India)	No orders have yet been placed.	In December 2020, the system achieved a significant milestone by becoming the first domestically designed and produced weapon to successfully pass the Indian Army's field trials.
Asmi submachine gun (9 mm)	India	No orders have yet been placed.	Versatile second-line personal weapon suitable for tank and aircraft crews, radio operators, close combat, and counterterrorist operations, with a cost below INR 50,000.

Expected Deal value would be around $550-650mn

Source: ORF report, CEBPL

The Indian Artillery

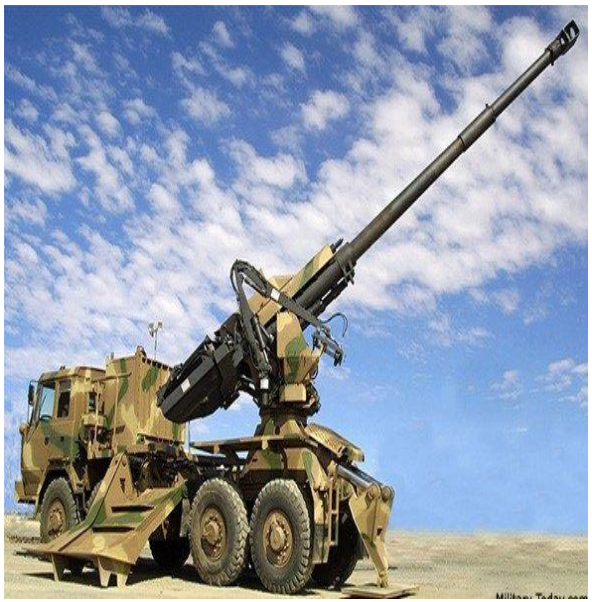
Program under developmental stage (2021–31)

- According to several RFP issued over the years, the IA plans to induct 1,580 towed guns, for which Israel's Elbit Systems is the preferred supplier. The deal for the same is yet to be signed. On 1 April 2021, IA issued a Request for Information (RFI) to procure an unspecified number of 155 mm/52 calibre MGS, On several occasions in May 2018, December 2019, November 2020, and June 2021, DRDO has successfully tested the enhanced version of the Pinaka-guided rocket system.

Name of the System	Category/ Type	Origin	Specifications
Autonomous Towed Howitzer Ordnance System (ATHOS)	Towed Artillery Gun	Israel	155 mm/52 calibre Range: > 40 km
155 mm and 52 calibre MGS	Mounted Gun System (MGS)		155 mm/52 calibre
Pinaka Mk-II	Guided MBRL	India	122 mm calibre

Expected Deal value would be around $1-2bn

Source: ORF report, CEBPL



Source: Media search, CEBPL

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Opportunities in Naval Forces

Impressive Fleet and Personnel Strength of the Indian Navy

- The Indian Navy, established in 1612, operates under the command of the President of India and plays a crucial role in nuclear deterrence, naval warfare, force projection, and sealift operations. It maintains equipped and training bases across several states, including Andaman and Nicobar Islands, West Bengal, Andhra Pradesh, Tamil Nadu, Odisha, Kerala, Lakshadweep, Maharashtra, Goa, Karnataka, and Gujarat. These bases handle various tasks such as ammunition support, logistics, maintenance, MARCOS bases, air stations, forward operating bases, submarine and missile boat facilities, missile defense, and coastal defense.

- The Indian Navy boasts an impressive fleet, consisting of 300 aircraft, 150 ships, 4 fleet tankers, 1 mine countermeasure vessel, 24 corvettes, 16 attack submarines, 1 ballistic missile submarine, 1 nuclear-powered attack submarine, 13 frigates, 11 destroyers, 8 landing ship tanks, 1 amphibious transport dock, and 2 aircraft carriers, along with various small patrol boats, supplementary vessels, and sophisticated ships.

- With a strength of 67,252 active personnel and 75,000 reserve personnel, the Indian Navy plays a vital role in safeguarding the nation's maritime interests and maintaining its maritime security.

Indian Naval Force

Ship type	India	Pakistan	China	2 front war Short Fall
Aircraft carriers	2	0	3	1
Destroyers	11	0	38	27
Frigates	13	8	54	49
Corvettes	23	0	73	50
Submarines	16	6	74	64
Total	**63**	**14**	**242**	**191**
Total naval capacity including above	**268**	**96**	**741**	**569**

Source: Media search, CEBPL

Planned Inductions Over the Next Decade

- The Indian Navy (IN) is currently engaged in a rapid modernization drive as part of its 15-year indigenisation plan (2015-2030) with the goal of increasing the fleet size from the existing 150 to 200 by 2027. To achieve this, the Navy has 50 ships and submarines under construction in Indian shipyards, comprising both public and private sectors. These major programs are progressing through various stages of procurement, playing a significant role in enhancing the Navy's capabilities and ensuring continued fleet modernization

Sr. No	Program name	Quantity	Current status
1	Indian Aircraft Carrier – 3 (IAC3)	01	Planned
2	Multi-Role Carrier Borne Fighter (MRCBF) Aircraft	57	26 Rafael-M deal done USD 5-6bn. Remaining aircraft not finalize is in under process.
3	Naval Multi-Role Helicopters (NMRH)	123	RFI issued in 2017, to be built under Strategic Partnership Model (SPM)
5	Light Maritime Utility Helicopter ("Naval Utility Helicopter NUH)	111	Defence Acquisition Council (DAC) approved acquisition of NUH
6	Landing platform Docks (LPD)	04	RFI was issued in August 2021
7	Next Generation Missile Vessel (NGMVs)	06	Cochin Shipyard Limited (CSL) won the bid in Feb 2021
8	Naval Shipborne Unmanned Aerial System (NSUAS)	15	RFI issued in Feb 2020, RFP expected to issue by Dec 2020
9	Next generation guided missile destroyer (NGD)	5 -10	Finalized in sometime in FY24. started production in 2025-2026
12	Mine Counter Measure vessels (MCMVs)	NA	The Indian Navy has launched a fresh hunt to buy 12 mine counter-measure vessels (MCMVs) from Indian shipyards to strengthen its mine-warfare capabilities
13	Next generation offshore patrol vessels (NGOPV)	11	Approval from DAC received

Expected deal value would be around $29-31bn

Source: KPMG, CEBPL

Submarines

Planned Inductions Over the Next Decade

- Over the next decade, the Indian Navy (IN) has ambitious plans to introduce six submarines in the P-75 (I) class and an additional six SSNs (nuclear-powered attack submarines). The recent AUKUS announcement by Australia has spurred New Delhi's efforts to intensify its SSN manufacturing for its navy.
- The IN's focus also lies in inducting the INS Arighat, the second ballistic missile nuclear submarine (SSBN) after the INS Arihant, and the S4, an advanced submarine in the same class, to bolster its deterrence capabilities against China. The ongoing development of the K5 and K6 submarine-launched ballistic missiles will be equipped on the new SSBNs, and researchers are working on the K-8 missile, a larger variant with an extended range of 8,000 kilometers.

Class	Program name	Type	Origin	Displacement in Tonnes	Commissioning / Status
Arihant class		SSBN	India	Arighat 6,000 S4 and S4* 7,000	Arighat is presently under trails S4, S4* are under construction
S-5		SSBN	India	13,500	Project has been approved with a budget of INR 10,000 crores
Nuclear attack submarines		SSNs	India		
Kalveri class			India	1,870	Vela and Vagir (launched in 2019, and 2020) are in sea trials. Vagsheer is under construction.
Project 75 I		SSK	India		India's Defence Acquisition Council (DAC) granted approval on 4 June 2021 for the construction of six conventional submarines under Project-75I. The estimated cost of this deal is INR 43,000 crores.
Destroyer-Project 18	Stealth guided missile destroyer		India	10,000-13,000	As per media reports, the Indian Navy is considering the construction of 13,000-tonne stealth-guided missile destroyers.
Frigates-Upgraded Talwar/Teg class	Stealth guided missile frigate		Russia	4035	In November 2018, India's Goa Shipyard Limited (GSL) signed an agreement with Russia's Rosoboronexport to build two frigates of the same class in Goa. The deal, valued at $500 million, includes technology transfer from Russia

Expected deal value would be around $29-31bn

Source: ORF report, CEBPL

Navy: Aircraft Carriers

Developments in Aircraft Carrier Program (2021-31)

- The Indian Navy's future aircraft carrier, INS Vishal (IAC-II), is expected to seek assistance from the Russian Design Bureau to incorporate Russian aircraft onboard the carrier. Cochin Shipyard Limited will be responsible for the development and manufacturing of the 65,000-tonne flat-top carrier, which is 25,000 tonnes larger than the INS Vikrant. Unlike the STOBAR system used on IAC-I, the INS Vishal will adopt a CATOBAR configuration, inspired by American Navy models.

- The CATOBAR system will enable the INS Vishal to accommodate heavier and larger mission-minded fixed-wing aircraft, including Airborne Early Warning (AEW) types, granting the Indian Navy a strategic advantage in the South Asian-Pacific Theater and bolstering its maritime dominance in the region

Class/ Project	Type	Origin	Displacement in tonnes	Commissioning/ Status
IAC-II	Catapult Assisted Take-Off but Arrested Recovery (CATOBAR) carrier	India	50,000-65000	The Indian Navy originally conceived IAC-II as a 65,000-tonne aircraft carrier. However, due to budget constraints, the proposal was downsized to a 50,000-tonne carrier. Currently in the proposal stage, IAC-II awaits clearance from the Ministry of Defence (MOD).

Indian Coast Guard:-The following are the major procurement programs in the pipeline of ICG

Sl No	Program name	Quantity	Current status
1	Fast Patrol Vessel	8	▪ In 2022 Defence Ministry inks Rs.473 crore deal with Goa Shipyard Ltd to acquire eight fast patrol vessels for Coast Guard. ▪ A Coast Guard official said deliveries of the vessels were likely to happen over the next four to five years
2	Air Cushion Vehicles	12	RFP issued in Jul 2019
3	Ammunition Barges	8	

Expected deal value would be around $5-6bn

Source: ORF report, CEBPL

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Opportunities in Air Power

Indian Air Force (IAF): Overview and Strength

- Established on 8th October 1932, the Indian Air Force (IAF) ranks as the 4th largest air force globally with 2,263 military aircraft, comprising 525 fighter/interceptor aircraft, 729 helicopters, 254 fixed-wing aircraft, 73 special-mission planes, and 12 Unmanned Combat Aerial Vehicles (UCAVs).
- With 139,576 personnel on active duty and an additional 140,000 in reserve, the IAF possesses a significant force size. Its fleet encompasses advanced multi-role fighters such as Rafael, Sukhoi, HAL Tejas, and SEPECAT Jaguar, along with land-based missile systems like surface-to-air and ballistic missiles.
- The IAF has a distinguished history of winning wars and developing indigenous aircraft. However, it faces challenges in comparison to countries like Saudi Arabia and Japan, as it relies on Russian airframes while they operate F-15s.
- Throughout its history, the IAF has actively participated in various operations, including Operation Vijay, Operation Cactus, and four major wars with Pakistan.

Indian Air Force

Aircraft type	India	Pakistan	China	2 front war Short Fall
Fighter aircraft	173	60	1049	936
Multirole aircraft	405	275	1130	1000
Attack aircraft	120	69	120	69
Helicopters	729	400	1355	1026
UCAV (combat drone)	12	113	151	252
Total aircraft including above(Others-Transport Aircraft, AEW&C, etc)	**2263**	**1531**	**4630**	**3898**

Source: Media search, CEBPL

Air Force-Projects Underway

Developments from 2021 to 2031

Fighter Aircraft	Type	Origin	No. of Squadrons	Procurement/Upgrade Status
MiG-29	Air superiority fighter aircraft	Soviet Union/ Russia	4*	On 2 July 2020, the Defence Acquisition Council (DAC) gave approval for the procurement of 21 MiG-29s and the upgrade of the existing 59 MiG-29s.
Su-30 MKI	Multirole air superiority fighter aircraft	Russia	12	In July 2020, the Defence Acquisition Council (DAC) approved the procurement of 12 Su-30 MKIs from HAL (Hindustan Aeronautics Limited)
Hindustan Turbo Trainer-40 (HTT-40)	Basic trainer aircraft	India	70 nos	On 4 February 2021, HAL (Hindustan Aeronautics Limited) received a Request for Proposal (RFP) from the Indian Air Force (IAF) for 70 HTT-40 basic trainer aircraft, with an option for an additional 38 aircraft. Sources from the Ministry of Defence (MoD) suggest that the follow-on 38 aircraft may be equipped as light-attack aircraft.
Mirage-2000	France	Single Engine Single Seat Max Speed M2.3		In 17 September 2021, Hindustan Times reported that the Indian Air Force (IAF) would procure 24 second-hand Mirage-2000 fighters from France.

Expected deal value would be around $3-4bn

Source: ORF report, CEBPL

Projects Underway cont..

The major programmes under various stages of procurement stage are mentioned below:

Program name	Quantity	Current status
LCA Mk-2(Medium Weight Fighter)	216	Preliminary Design Review (PDR) approved on 20 March 2020
Twin engine deck based fighter (TEDBF) /Omni role Combat aircraft (ORCA)	NA	Cleared by Defence Minister on 22 May 2020 at ADA's Annual Board Meeting
Advanced Multirole Combat Aircraft (AMCA)	126	Planned to enter service in 2035 to replace Sukhoi 30 MKI aircraft
Medium weight multi role fighter aircraft	114	RFI issued in 2018
Infrared Imaging Search & Track System (IRST)	100	Design and development phase.
Foldable Fiberglass Mat (FFM) for runway repair	122 sets/ year	EoI response received
Unmanned Combat Arial Vehicles (UCAVs)		Rs.400 cr invested in R&D, CATS Warrior program underway with HAL & NAL, expected by 2024
Light Combat Helicopter (LCH)		Deliveries started by HAL, additional orders anticipated.
Medium Altitude Long Endurance (MALE) UAV		RFI issued in 2016
Hawk Mk132-Ground attack advanced jet trainer (AJT)		The Indian Air Force (IAF) and HAL are enhancing mission systems and integrating new weapons into the existing Hawks. In January 2021, the Hawk aircraft achieved a significant milestone by successfully firing Smart Anti-Airfield Weapons (SAAW) for the first time.
Mirage-2000-Multi-role combat aircraft		On 17th September 2021, Hindustan Times reported that the Indian Air Force (IAF) is set to procure 24 pre-owned Mirage-2000 fighters from France at a cost of 27 million Euros

Expected deal value would be around $45-50bn

Source: KPMG, CEBPL

Airborne Intelligence, Surveillance, and Reconnaissance

Planned Acquisitions (2021–31)

Name	Role	Country of Origin	Quantity	Description
DRDO Rustom-2	ISR RPA	India	TBD	The Rustom-2 will likely be procured in large numbers if development concludes successfully.
IAI-Beriev A-50EI (Phalcon)	AEW&C, SIGINT	Israel/Russia	2	The MOD periodically approves and re-approves procurement of additional A-50s, but no contract has been signed.
DRDO Airbus A319 AEW	AEW&C, SIGINT	India/Europe	6	Development has started as of mid-2021, but the planned service entry date is unknown.
Boeing P-8I	MPA	USA	8	Two aircraft are to be delivered from under an existing contract, and procurement of another six has been cleared by the MOD.
Boeing 737	SIGINT	USA/India	2	Equipped with the DRDO SIGINT suite.
HAL Dornier 228	MPA	India	12	Upgraded with new avionics and improved Elta radar and Elbit ESM; 12 on order.

Expected deal value would be around $4-5bn

Source: ORF report, CEBPL

Transport Aircraft and Rotary Wing Fleet-Developments from 2021 to 2031

Aircraft	Type	Origin	No. of Squadrons	Procurement/Upgrade Status
			Transport Aircraft	
An-32	Medium transport aircraft	Soviet Union/ Ukraine	07	The upgrade of the remaining fleet of An32 is likely to be completed by 2025 at the Base Repair Depot (BRD) no. 1, Kanpur.
Do-228	Light transport aircraft	Germany	2.5	The numbers of Flight Inspection aircraft would be 14 228 Dornier as part of the 41 Squadron which has been operating this type of light transport aircraft for many years.
			AWACS/AEW	
AEW	Airborne Early Warning and Control (AEW&C) aircraft		6 units	On 17 December 2020, the DAC granted an Acceptance of Necessity (AON) for the procurement of six AEW&C Mk-2 aircraft.
			Rotary Wing Aircraft	
Mi-17V5	Mediumlift helicopter	Soviet Union/ Russia	06	Since 2019, Mi-17V5s are undergoing their first major overhaul at 3rd BRD, Chandigarh.
HAL LUH	Lightutility helicopter (LUH)	India		On 7th February 2020, the Centre for Military Airworthiness and Certification (CEMILAC) granted Initial Operational Clearance (IOC) to the Indian Air Force (IAF) variant of LUH (Light Utility Helicopter). HAL (Hindustan Aeronautics Limited) has received an in-principle order of 61 LUH helicopters from the IAF
HAL LUH	Light multimission helicopter	Russia		In 2015, India and Russia signed an intergovernmental agreement for the procurement of 200 Ka-226T utility helicopters, with the Indian Air Force (IAF) slated to receive 65 of these helicopters. The delivery of the first helicopter is expected within 36 months from the signing of the contract, subject to the resolution of the indigenous content issue

Expected deal value would be upward of $2bn

Source: ORF report, CEBPL *Note: The information provided in this report may not encompass all the programs and capabilities in our analysis. The content presented is based on data available in the public domain and our own assumptions and may not reflect the complete information.*

Choice Equity Broking Private Ltd.

Section-IV Company section

Choice

Astra Microwave Products Limited

Uniting Vision and Technology for Growth

Defence Initiation

Choice Equity Broking Private Ltd.

Astra Microwave Products Limited

Uniting Vision **and Technology for Growth**

Defence Initiation

August 2023

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Astra Microwave Products Limited

OUTPERFORM

Uniting Vision and Technology for Growth

About company

Astra Microwave Products (AMPL) was founded in the year 1991. This company engaged in designing and manufacturing of radio frequency (RF) and microwave super components and sub–systems that are used in areas of defense, space and civil communication systems. They are widely used by corporates, public institutions, telecommunication companies, commercial enterprises and defence laboratories of the Government of India.

Investment rationale

Strong order book: AMPL has a proven track record of making high value-added SYSTEMS, RF and microwave super components and sub-systems which are becoming more relevant due to various government initiatives like IDDM, MAKE-II. Further with its in-house capability to design and develop new age TRM company is able to garner big share of defence in overall order book. As on 31st march total order book stood at Rs1554cr (2x of FY23 sales). With the presence of its technology's application in various product like Radar, EW, Telemetry, Missiles, Satellites, SATCON etc. guiding a TAM of around Rs.200-250bn till FY28 which provide AMPL a long runway to grow at healthy rate going forward. Further

Bright opportunity in Defence segment: AMPL' majority of the revue come from defence segment and it has grown by 25% CAGR over last 5 years, we expect best is yet to come for Astra as sector is facing various tailwinds like defence modernization plan by GoI, increasing defence spending, space opportunity, import negative list and Favorable policy initiatives like Buy (IDDM - Indigenously Designed, Developed and Manufactured), MAKE-II, MAKE-II will drive the future earnings in near to medium term.

Strong research and development: ASTRA has strong in-house capability in the microwave radio frequency (RF) applications domain. Company has highly experienced workforce out of 1290, 36% is deployed towards R&D. With the help of its R&D research team its Bengaluru and Unit-III has been recognized by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India. This strong R&D capability help to execute through BTS (Build to Specifications) and BTP (Build to Print) route. AMPL has developed GaN TRM's and currently working with various modernization program such as Su-30 Mk 1, LCA Mk 2 and AMCA fighter aircrafts. AMPL continue to maintain its R&D investment in the range of 4-5% to further strengthen its engineering capability and to pursue new opportunity in defence, space and metrological sector.

View and valuation: Given the GoI's effort to encourage local manufacturing and increase in ToT activity by DRDO, ISRO we believe companies like Astra would be key beneficiaries from these opportunities. We like the growth story of Astra given steps to move up the value chain from the sub-systems supplier to a system supplier (where opportunity size is huge) and has identified certain growth areas such as SATCOM systems, wind profiler radars, ground surveillance radars, Doppler weather radars, anti-drone systems etc. Further strong order book and healthy product development pipeline provide healthy growth revenue growth opportunity. We initiate coverage on Astra with TP of **Rs. 451 (28x of Sep-25E EPS)**. Recommend rating **OUTPERFORM**.

CMP (Rs)	**382**
Target Price (Rs)	**451**
Potential Upside (%)	**18**

Company Info

BB Code	ASTM:IN EQUITY
ISIN	**INE386C01029**
Face Value (Rs.)	2.0
52 Week High (Rs.)	389.5
52 Week Low (Rs.)	213.15
Mkt Cap (Rs bn.)	35.14
Mkt Cap ($ bn.)	0.42
Shares o/s (Mn.)/Free Float (%)	30/88
FY23 EPS (Rs)	7.4
EPS SEP-FY25E (Rs)	16.1

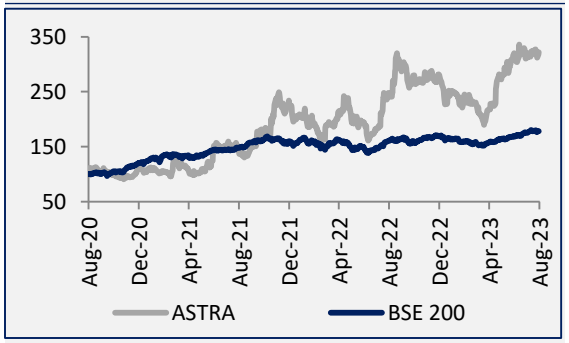
Shareholding Pattern (%)

	Jun-23	Mar-23	Dec-22
Promoters	6.54	7.17	8.27
FII's	3.03	2.32	2.32
DII's	9.86	0.07	0.07
Public	80.58	90.44	89.34

Relative Performance (%)

YTD	1 YEAR	2 YEAR	3YEAR
ASTRA	30	112	222
BSE 200	11	20	78

Rebased Price Performance



Radar systems market to log 13-14% CAGR over fiscals 2022-27

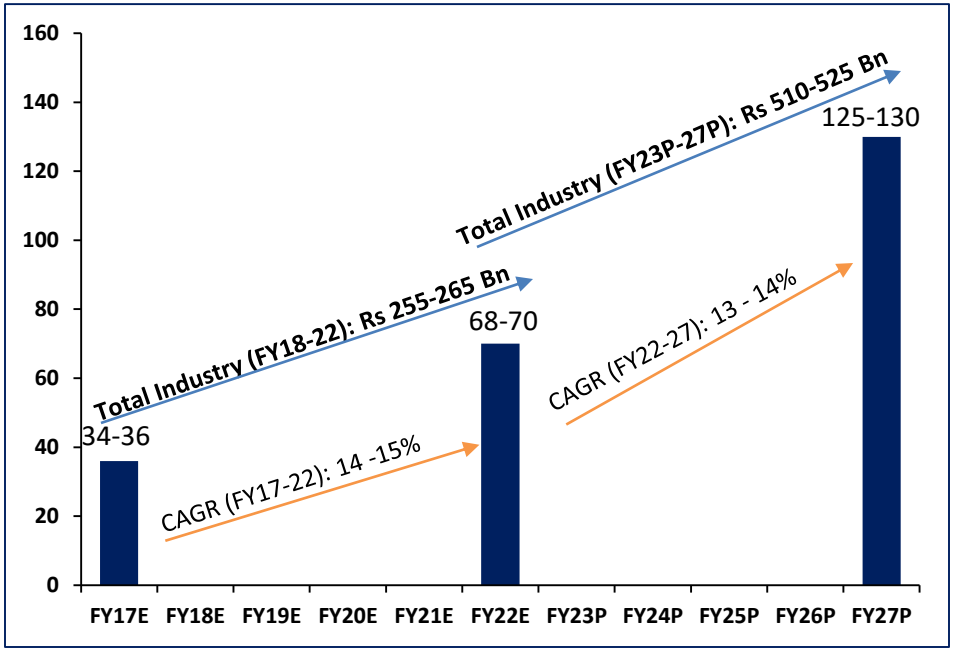
- The size of the radar systems market was cumulatively estimated at ₹255-265 billion over fiscals 2018-22. The market size was estimated at ₹34-36 billion as of fiscal 2017 and grew at a 14-15% CAGR over fiscals 2017-22 to ₹68-70 billion. It is expected to grow at a 13-14% CAGR over fiscals 2022-27 to an estimated ₹125-130 billion. The market will achieve a cumulative size of ₹510-525 billion during fiscals 2023-27, at a multiplier of ~2.0, compared with the cumulative fiscals 2018-22 market.
- The radar systems market is driven by demand from the military forces for detecting enemy movements. Key players in this space are DRDO and BEL. DRDO designs, develops, and tests new radar products and technologies. It enlists the private sector's help in the development process for supply of critical sub-systems of the radar system. With regard to new technology, the development of the first product takes 3-4 years, followed by 6-12 months of testing. Subsequently, production is initiated based on the order quantity.
- With the private sector gaining prominence, private players are now directly competing for defence tenders and providing turnkey solutions, based on technology transfer from DRDO or in-house developed products. A limited number of private players in the sector are capable of providing these critical systems and sub-systems, given that high technical expertise and relevant infrastructure is required to produce these components. Private players present in the space include Astra Microwave Products Ltd, Data Patterns (India) Ltd, and Tata Advanced Systems.

AMPL capability in Radar systems with an opportunity size upto Rs.111bn by FY2028.

- Design & development of Gallium Arsenide (GaAs) and Gallium Nitride (GaN) TRMs across all frequency bands VHF, UHF, L, S, C, X, Ku and Ka band with various power levels.
- Design and development of all kind of radar sub-systems including power amplifiers, receivers, exciters, filters, synthesizers, converters etc.
- In-house development of Signal Processing & Radar Data Processor.
- Only Indian Company with proven capability of developing Active Array Antenna Unit (AAAU) for airborne radars of fighter aircraft - Uttam Radar for LCA Mk IA. Variant of Uttam with GaN TRMs is proposed for modernising existing radars of Su-30 Mk I and for future LCA Mk 2 and AMCA fighter aircrafts .
- AMPL is developing Pulse Phased Array Tracking Radar, AAAU for Ship Borne Radars, DBF based Counter Drone Radar, Bird Detection & Monitoring Radars, Telemetry Tracking System and manufacturing Coastal Surveillance Radars, Counter Drone Radar and Ground Penetration Radars.
- AMPL has been supplying Wind Profile Radars, Doppler Weather Radars, Automatic Weather Stations to IMO

Source: Company, CEBPL

Total radar systems market (Rs. billion)



Source: Company, CEBPL

Radar systems market to log 13-14% CAGR over fiscals 2022-27

Radar programme	System Description
MPR - Arudhra	▪ The MPR (Arudhra) is a fully active, aperture rotating four dimensional multi-beam multifunction phased array radar. ▪ It has an instrumented range of 400 km and a detection range of 300 km. It also has a mode for detection and tracking of low RCS, high-speed and highly maneuvering targets. ▪ Its scalable architecture enables the development of a family of radars for different applications. The design, development, and user trials are completed and the system has been accepted for induction into the Indian Air Force. ▪ BEL has an order for Arudhra radar worth Rs 30 billion in the pipeline.
AESAR - UTTAM	▪ In project UTTAM, a fully engineered, qualified, and deployable state-of-the-art AESAR has been developed indigenously with scalable architecture that can be adapted for different types of fighter class of airborne platforms. ▪ Core components required for AESAR are active aperture array unit (AAAU), primary power system, and exciter receiver processor. ▪ The critical sub-systems of AESAR have been established, along with a production base through Indian industries, for quick realization of the AESAR with platform- oriented architecture suitable for all combat aircraft. The radars have been flight tested on the LCA platform for different modes. Various programmes are in place, involving DRDO, DPSUs, and private players, for developing these radars across varied aircraft platforms.
Primary radar for airborne early warning and control system (PR for AEW&C)	▪ The Primary radar for AEW&C is an active phased array radar with a normal detection range of 200 km and an extended range of 300 km. ▪ It is a multi-mode early warning radar with an electronically scanned active array antenna. It is mounted on executive jet class (Embraer) aircraft for carrying out airborne surveillance. The radar has been inducted by the Indian Air Force.
Radars for quick reaction surface-to-air missile (QRSAM)	▪ The QRSAM system is required to provide air defence cover to mechanised columns on the move. ▪ The system requires a battery surveillance radar (BSR) for surveillance and battery multifunction radar (BMFR) for fire control. Both BSR and BMFR are active phased array radars with four antenna arrays covering the entire 360 degree in azimuth and 0 to 60 degrees in elevation. Both the radars are mounted on an 8x8 HMV and have an on-board power source and cooling system. On-the-move surveillance and tracking performance have been established. ▪ Development has been completed, and user trials are underway.

Source: Company, CEBPL

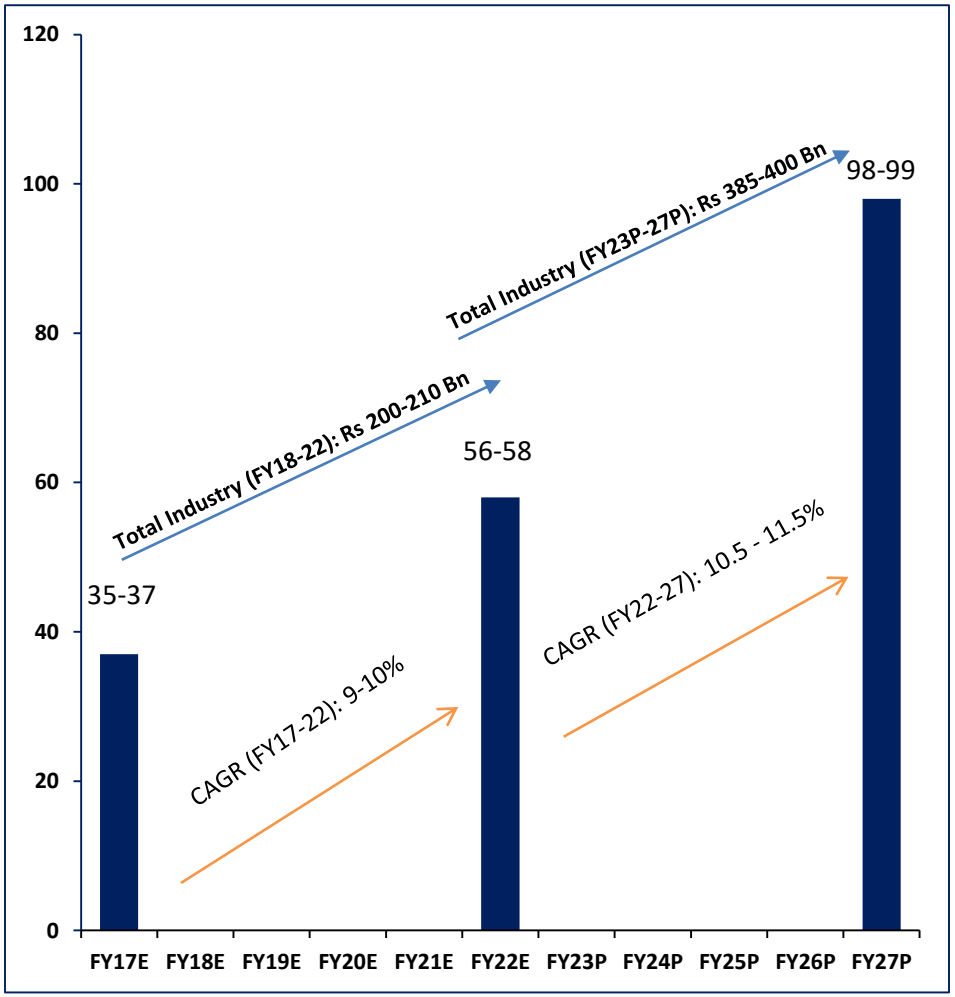
Missile system electronics and telemetry market to log 10.5-11.5% CAGR over fiscals 2022-27

- The size of the missile system electronics market was cumulatively estimated at Rs 200-210 billion over fiscals 2018-22. As of fiscal 2017, it was estimated at Rs 35-37 billion. The market size grew at a 9-10% CAGR over fiscals 2017-22 to Rs 56-58 billion. It is expected to grow at a 10.5-11.5% CAGR over fiscals 2022-27 to an estimated Rs 93-98 billion. The market will achieve a cumulative size of Rs 385-400 billion over fiscals 2023-27, at a multiplier of ~1.9, compared with the fiscals 2018- 22 market.
- The government is incorporating state-of-the-art technology in the weapon systems of the armed forces. This is imperative, given the current geopolitical situation, as India needs to ensure competitive supremacy of its weapon systems. India is constantly striving to improve its arsenal through the development of technology and constant testing

Missile system	Description
Agni systems	▪ India carried out a successful training launch of intermediate-range ballistic missile Agni-3 from APJ Abdul Kalam Island, Odisha, in November 2022. ▪ Earlier, in June 2022, a successful training launch of Agni-4 was carried out. ▪ Both these launches validated all the operational parameters and the reliability of the system. The successful test reaffirms India's policy of having a Credible Minimum Deterrence capability as a counter to the possible military escalation by neighbours.
Helina	▪ In April 2022, flight trials were conducted from an ALH, and the missile was fired successfully, engaging the simulated tank target.
QRSAM	▪ DRDO and the Indian Army successfully completed six flight-tests of the QRSAM system from Integrated Test Range (ITR) Chandipur off Odisha's coast.
MRSAM	▪ The two missiles launched during the flight tests achieved direct hits against high-speed aerial targets at ITR Chandipur, off Odisha's coast, in March 2022. The launches were carried out for establishing the accuracy and reliability of the weapon system.
Vertical launch short-range surface-to-air missile	▪ The vertical launch short-range surface-to-air missile was successfully flight-tested by DRDO and the Indian Navy from an Indian naval ship at ITR Chandipur. ▪ This system helps strengthen the Indian Navy in neutralising aerial threats at close ranges, including sea-skimming targets.

Source: Company, CEBPL

Total missile system electronics and telemetry market (Rs. billion)



Source: Company, CEBPL

Electronic warfare market to log 14-15% CAGR over fiscals 2022-27

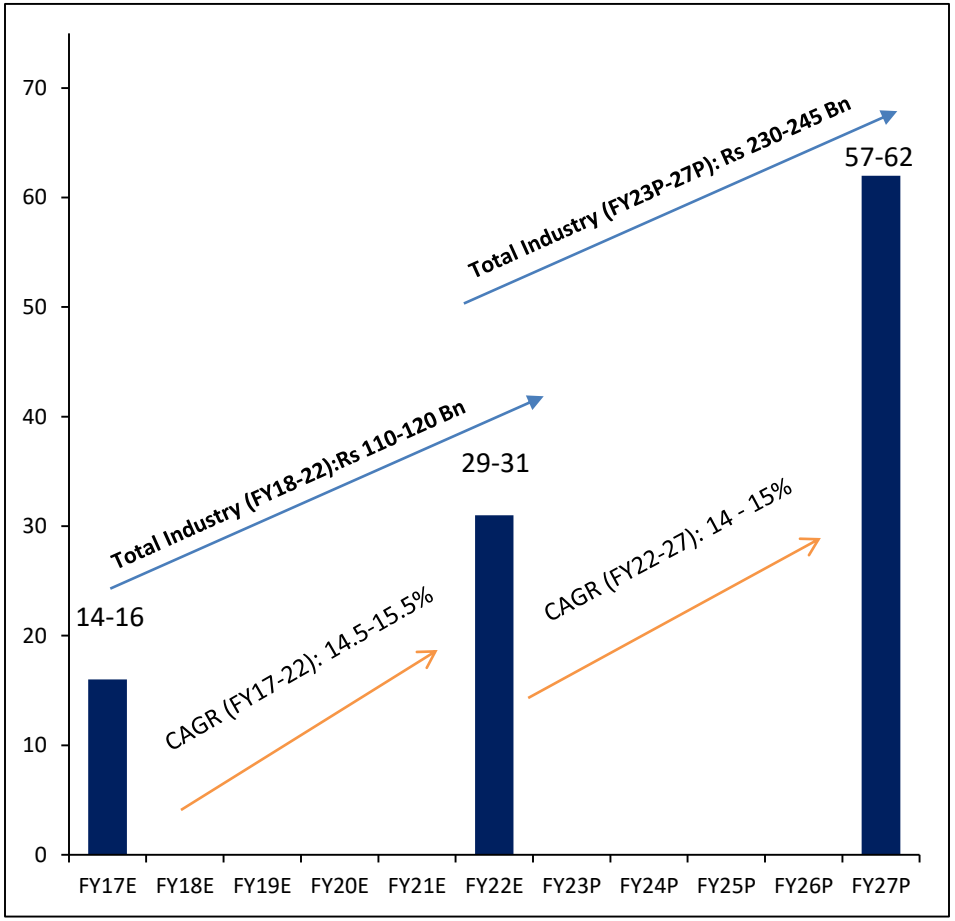
- The EW market size was cumulatively estimated at Rs 110-120 billion during fiscals 2018-22. As of fiscal 2017, the market size was estimated at Rs 14-16 billion. It grew at a 14.5-15.5% CAGR over fiscals 2017-22 to Rs 29-31 billion. It is expected to grow at a 14-15% CAGR over fiscals 2022-27 to an estimated Rs 57-62 billion. The market will achieve a cumulative size of Rs 230-245 billion during fiscals 2023-27, at a multiplier of ~2.1, compared with the cumulative fiscals 2018-22 market.
- EW systems will keep gaining prominence in the Indian armed forces as a key weapon system, considering enemy nations are also improving their technological prowess in EW. Apart from the currently employed EW systems, there is a developing use of satellite-based GPS systems, remotely controlled UAVs, and cyber tools for disrupting enemy activities and infrastructure. In future, EW systems will be fully integrated with cyber warfare elements in wars. This is already in development across various nations.

AMPL capability in Radar systems with an opportunity size upto Rs.7-8bn by FY2028.

- AMPL has been supplying various kind of EW sub systems and components to DPSUs, such as Direction finding Receivers, Passive Homing Head for RF Seekers used in NGARM, Jammers, Filters, Amplifiers, Receivers etc.
- AMPL has been EW sub-systems and components to programs of Indian Airforce, Indian Navy and Indian Army. AMPL has been associated with Jammer's program of LCA and other fighter platforms in India.

Source: Company, CEBPL

Total EW market (Rs. billion)



Source: Company, CEBPL

Electronic warfare products in details

EW product	Description
Electronic support measures (ESM) Systems	▪ These systems provide military intelligence through surveillance in the electromagnetic spectrum, which aids the decision maker to use electronic attack, electronic protection, and other warfare systems. ▪ These systems can be installed across ships, aircraft, and land-based platforms.
Communications intelligence (COMINT) and communication jamming system	▪ This is a communication EW system is capable of carrying out ESM and ECM functions. ▪ It is capable of carrying out multiple functions simultaneously, such as searching, monitoring, data decoding, and recording and replaying a demodulated signal in V/UHF bands. ▪ The system is equipped with a state-of-the-art highly sensitive and very fast search receiver. It has ECM functionality with all modes of the communication jamming facility. It can also intercept and jam cell phones in the GSM and extended GSM bands.
Mobile ground-based electronic intelligence (ELINT) system	▪ The system includes a digital receiver and DF technology to search, intercept, measure, monitor, analyse, identify, and locate detectable radar emitters within the required frequency spectrum to provide information necessary for strategic and tactical operations. ▪ The system is configured as an integrated ELINT and wide-open ESM system and consists of three receiving stations (RS) and one control station (CS). One of the RS Stations also has a back-up CS facility. In addition, a repeater radio link is provided to extend the range of one of the RSs from the CS.
Integrated EW System	▪ An Integrated EW System is designed for plains, semi-desert regions, and mountainous terrain regions. ▪ It is capable of intercepting, analyzing, locating, and jamming enemy communication emitters. It covers the frequency band consisting of both, communication and noncommunication EW segments, linked with an intra-communication network. These segments are integrated to the countermeasure control center (CCC) and high-level control center (HLCC) complex.
Defence offset opportunity for AMPL in EW	▪ Antennas • EDLVA and BLI Super Components • EW Simulators • DIFM Receivers • Front End Receivers • Up/Down convertors • Homodyne Receivers.

Source: Company, CEBPL

Defence electronic capabilities

- AMPL has the capability of designing, developing sub-systems for airborne radars for fighter jet platforms. It can also design, develop and supply radio proximity fuze, airborne diplexer, transponder, transmitter, and command guidance unit. Company also developed wind profile radars and doppler radars and automatic weather stations to Indian Metrological Department.
- In defence company is developing active array antenna unit ("AAAU") for airborne radars of finhter aircraft, LCA Mk2. In order to capture the modernisation opportunity in defence electronics company is developing Gallium Nitride (GaN) TRMs and is working with defence agencies for incorporating such TRMs in modernizing existing radars of Su-30 Mk 1, LCA Mk 2 and AMCA fighter aircrafts. Furthermore, it has capability to develop and supply Gallium Nitride (GaN) TRMs and is working with defence agencies for incorporating such TRMs in modernizing existing radars of Su-30 Mk 1, LCA Mk 2 and AMCA fighter aircrafts.

Product profile of key players in the defence electronics segment

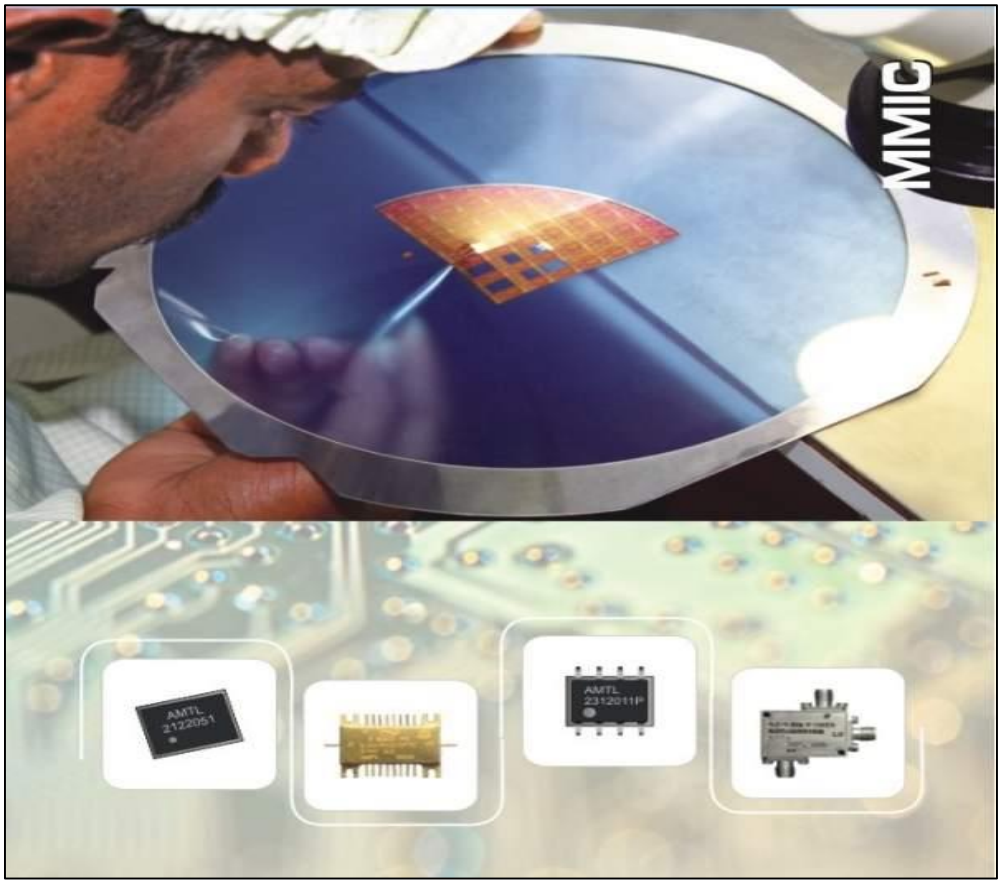
Sl. No	Key players	Radars	Missile & telemetry	Electronic warfare	Avionics	Counter-drone systems	Satellite & space	Hydro/ meteorology	Others*
1	Astra Microwave Products Limited								
2	Data Patterns (India) Limited								
3	Bharat Electronics Limited								
4	Centum Electronics Limited								
5	Alpha Design Technologies Private Limited								
6	Tata Advanced Systems Limited								
7	DCX Systems Limited								
8	Paras Defence and Space Technologies Limited								

Source: Company, CEBPL

Domain expertise in microwave and radio frequency systems and applications

- AMPL has over 30 years of domain expertise in microwave and radio frequency applications, Company has moved up the value chain from manufacturing sub-systems to development and manufacturing a wide range of high-end, critical microwave and radio frequency application-based equipment such as Monolithic Microwave Integrated Circuit ("MMIC") products, multi object tracking radar and airborne radars. AMPL work on high value complex projects awarded by public sector enterprises and DRDO and its domain expertise in development of critical microwave and radio frequency products with defence applications has enabled company to participate in several prestigious defence programs of India.
- AMPL has been a supplier of Transmitter Receiver Modules ("TRMs"), which are built using MMICs designed and developed by company, to the GoI as part of the Airborne Early Warning and Control System ("AEW&CS") programs. Company also supplied transportable wind profiler, doppler weather radars and automatic weather stations to Indian Meteorological Department.

MMIC product developed by Astra



Aelius Semiconductors develops GaAs and GaN MMIC products based on a robust and reliable design philosophy. These designs are fabricated at leading foundries across the world.

The products are tested and packaged as per customer's requirement utilizing state-of-the-art facilities.

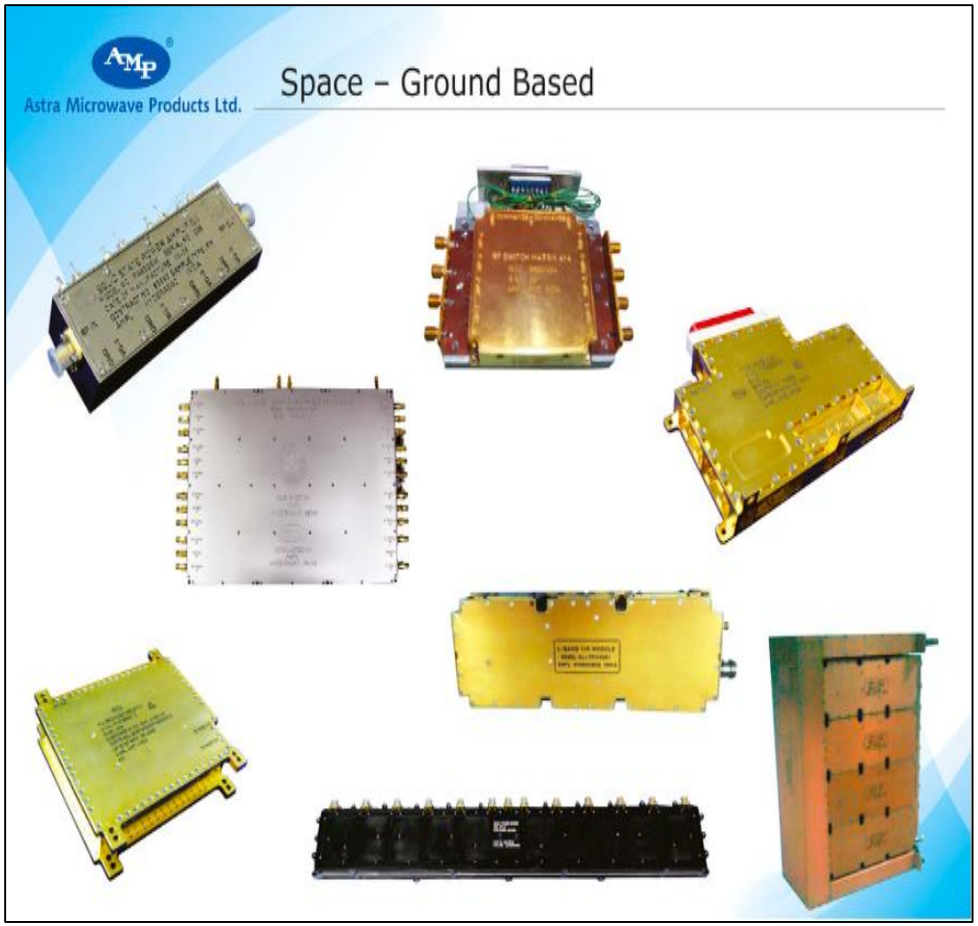
Aelius's unique and wide range of MMIC products are focused primarily on the Defense and Space industries, with competitive time lines and prices. We offer the flexibility to custom-package our products to customer's chosen configuration of die, package, or module.

Source: Company, CEBPL

Space electronic opportunity

- AMPL designs, develops and manufactures components and sub-systems used in ground-based modules and S-level (on-board) modules. Company develop sub-systems for India's Radar Satellite & Geosynchronous Satellite program, Resourcesat, Megatropics and Cartosat for Indian space programs by ISRO. In space vertical company manufacture TRM, MSS- Type-D terminals, Agriculture met tower, transmitters, Power amplifiers. As space sector in India is growing at rapid stage and launches of satellite also expected to increase significantly in future specially small satellites. We expect AMPL to benefit from this opportunity. Current space vertical order book is around 14% of overall size which was only 13% in FY22.

Ground Based Products



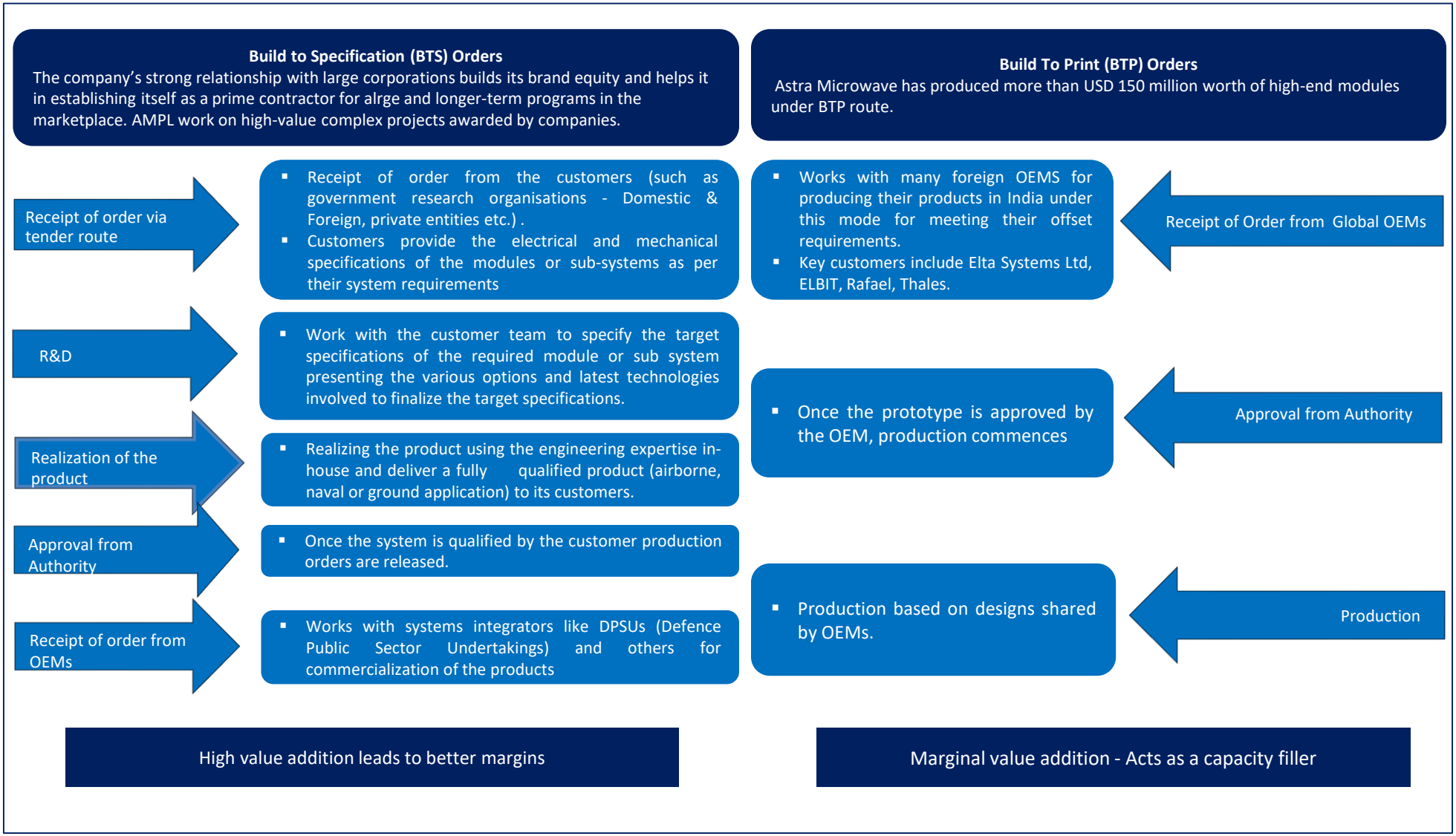
Source: Company, CEBPL

Flight Model Products

Source: Company, CEBPL

Strategy changed from Build To Print (BTP) Orders to Build to Specification (BTS) Orders

- **Moving from B2P to B2S- Post increase in localisation and ToT from agency like DRDO, ISRO etc**. B2S model is evolving where supplier work with OEM from design, develop, and test the product before the finished product is manufactured. This shift helping R&D driven company lile Astra to bid for complex program. Moreover, margin profile for this category of order is also better as there is high value addition than B2P.



Source: Company, CEBPL

Journey of Astra

- Astra Microwave Products Limited (AMPL) was incorporated in 1991 by a team of distinguished scientists with experience in RF/Microwave/Digital electronics and management of projects with high-technology content. The three promoters had back then sensed a need for a sound, technically powerful private company that can design, develop and produce high-end RF and Microwave subsystems and systems for strategic applications.

Key Milestones		
1991	Telecom	Incorporated as a Private Limited Company in 1991.
1993	Radar Electronics	Components and sub-systems for Radars were always a focus area for the company and the first few components that were built by Astra found their way into sub-systems of Radars developed by DRDO.
1993	Telemetry / Strategic Electronics	While addressing the requirements of the telecom industry, the promoters were also working with DRDO to get opportunities to design products for military applications. The first opportunities were received by the company to build products for Telemetry / Missile application.
1995	Went Public	Became publicly traded company in 1995
1997	First R & D Deliveries To Defense	1997 marked the first deliveries of modules that found application in Telemetry/Missile Electronics for a Surface to Air Missile program of the DRDO.
2000	Electronic Warfare	Astra Microwave started working in the complex field of EW in the year 2000. From a nominal start, Astra Microwave today has grown to be one of the important partners for DRDO, having supplied many critical and wide band products for EW application, especially in the Naval domain.
2003	Space Electronics	The invitation from ISRO for the Indian Private Industry to enter into the Space business in 2004 provided the right impetus for Astra Microwave to take up challenging work for components and sub-systems for Satellite Application. Astra Microwave is proud to have associated with all the major satellite launches in India since 2008.
2005	MMIC	In 2005, Astra Microwave decided to have a fabless design team in-house in order to design and develop critical MMIC's for getting advantages of cost, design flexibility to help miniaturize modules and the ability to control production requirements of critical devices in house.
2007	Foreign OEM Audits	Thanks to the offset rule introduced by DPP 2006, many foreign OEM's showed interest to work with Astra Microwave for discharging their offset requirements. The process of audits and vendor capability mapping starting in the year 2007.
2010	Offset Production	Astra Microwave became one of the first beneficiaries of an offset contract having bagged the contract to manufacture receiver side modules in the year 2009 for radar application. The first products under this contract were delivered to the customer in 2010.
2013	Turnover > 500 + Cr	On the basis of domestic and offset work in the ratio of 50-50%, Astra Microwave crossed an annual turnover of 500 Cr. for the first time.
2018	Developed System R&D Centre In Bengaluru	To move up the value chain by building Systems and have a strong presence in Bengaluru, where most of our Customers are based, Astra Microwave established an R&D Centre with System Integration & Testing facility
2020	Milestones GSRS	Completed supply of 10 nos. Ground Surveillance Radars to BSF
2021	Milestones XDWR	Completed delivery of 10 nos. X-band Doppler Weather Radars to India Meteorology Department
2022	Aesa Radar	Delivered AAAU for Air-borne AESA Radar Delivered PATM-11 & Radiation Mode T&E Facility for Radar EW Systems
Upcoming	EW System	Multi Function Radar and EW Systems

Source: Company, CEBPL

Shareholding Pattern(%)

Names	Dec-21	Mar-22	June-22	Sep-22	Dec-22	Mar-23	Jun-23
Promoters	**8.71**	**8.71**	**8.46**	**8.28**	**8.27**	**7.17**	**6.54**
Prakash Anand Chitrakar	3.74	3.74	3.74	3.74	3.74	3.74	3.41
Renuka Chitrakar	3.42	3.42	3.42	3.42	3.42	3.42	3.12
Prameelamma Ch .	1.07	1.07	0.98	0.86	0.85	0	0
Prasanna Lakshmi .B .	0.43	0.43	0.32	0.25	0.25	0	0
Satish Atluri	1.49	1.49	1.49	1.49	1.49	1.41	0
Ramakrishna Reddy Putchalapalli	0.04	0.04	0	0	0	0	0
Public	**89.28**	**89.18**	**89.2**	**88.52**	**89.34**	**90.44**	**80.58**
Ratnabali Investment Private Limited	5.35	5.35	5.35	5.35	6.91	6.91	6.30
Emerald Company Private Limited	4.46	4.46	4.46	4.46	4.46	4.46	4.45
Atim Kabra	3.87	3.87	3.87	3.87	3.87	3.87	3.53
Adventz Finance Private Limited	3.18	3.18	3.18	3.18	3.18	3.18	2.90
Mount Intra Finance Private Limited	2.48	2.64	2.65	3.33	3.41	3.43	3.04
Texmaco Infrastructure & Holdings Limited	2.49	2.49	2.49	2.49	2.49	2.49	2.27
Genesis Advertising Private Limited	2.41	2.41	2.48	2.48	2.48	2.48	3.14
Strategic Ventures Fund Mauritius Limited	1.93	1.93	1.93	1.93	1.93	1.93	0
Ratnabali Securities Private Limited	1.56	1.56	1.56	1.56	0	0	0
Meenakshi Mercentiles Ltd	1.62	1.62	1.62	1.39	1.39	1.39	1.26
Others	**4.6**	**4.65**	**4.95**	**3.2**	**4.29**	**4.81**	**5.49**
FIIs/DIIs	**2.01**	**2.11**	**2.33**	**3.2**	**2.32**	**2.32**	**12.89**

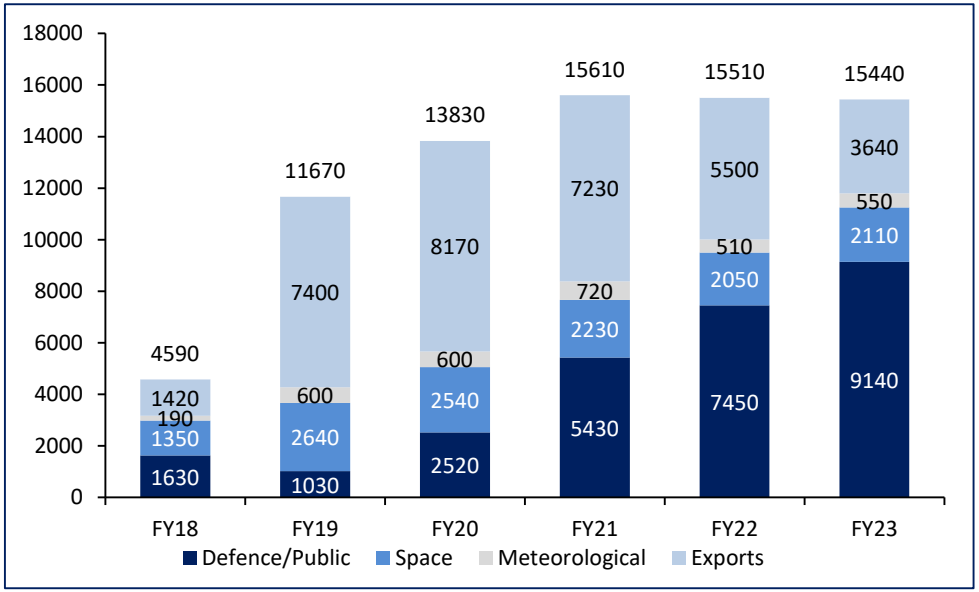
Source: Company, CEBPL

Management Details

Name and Designation	Brief description
Shri. S Gurunatha Reddy Managing Director	Shri. S Gurunatha Reddy, A graduate in Science and Mathematics and Fellow Chartered Accountant. Worked in private sector industry and gained over 33 years of experience in accounting, finance, taxation, secretarial etc.
Shri. Maram Venkateshwar Reddy Joint Managing Director	Shri. Maram Venkateshwar is a Graduate in Engineering (Electronics) and a Post Graduate in Business Administration, Mr. M.V. Reddy has 28 years of experience in handling Marketing and Business operations in the domain of Defense, Space and Telecom segment in India and Overseas Market. As most of his experience has been working for the Indian Private industry meeting the needs of the Strategic Electronics sector in India and abroad, he has a good understanding of the requirements and knows the challenges and opportunities for the private companies in this business segment.
Shri. Atim Kabra Director – Strategy and Business Development	Shri. Atim Kabra is the Founding Partner of Frontline Strategy Limited, the investment manager/advisor for two Mauritius based India centric Private Equity funds namely –India Industrial Growth Fund Limited and Strategic Ventures Fund (Mauritius) Limited. Atim Kabra is also the founder and Managing Director of Frontline Strategy Funds Pte. Ltd., a Singapore registered & licenced VCFM, which acts as the investment manager / advisor to Singapore based Venture Capital Funds – Prestellar Ventures Fund I Pte Ltd and Strategic Ventures Fund He has over 27 years of well rounded "equities exposure" including Portfolio Management, Equity Sales and Equity Research with global institutions like ABN AMRO Bank, ANZ Grindlays Bank. Atim Kabra has majored in Economics (Honors) from Delhi University and has a Masters in Management Studies from NMIMS (Bombay University).
Shri. Dr. Avinash Chander Chairman & Independent Director	Shri. Dr. Avinash Chander is the former Secretary, Defence R&D and Director General, DRDO. An eminent scientist in the field of missiles, he has been a pioneer in Strapdown Inertial navigation & Guidance. In addition, he has contributed in the development of several critical technologies in the field of radars, simulation, propulsion, control and System engineering.
Shri. PA Chitrakar Founder	Shri. P.A. Chitrakar had been with the Defence Electronics Laboratory, Hyderabad, as a scientist for over 20 years before co-founding Astra Microwave. P.A. Chitrakar had been with the Defence Electronics Laboratory, Hyderabad, as a scientist for over 20 years before co-founding Astra Microwave. An MSc (Physics) from Mysore University and an MTech (Advanced Electronics) from JNTU, Hyderabad, Mr. Chitrakar is an expert in, among others, the design of microwave components.
Shri. Kiran Dhingra Independent Director	Shri. Kiran Dhingra is a She has more than 39 years of experience in governance and has held senior positions in decision making capacities in practically all sectors the developmental, agricultural, social, industrial, infrastructural, transportation, corporate, economic and regulatory.

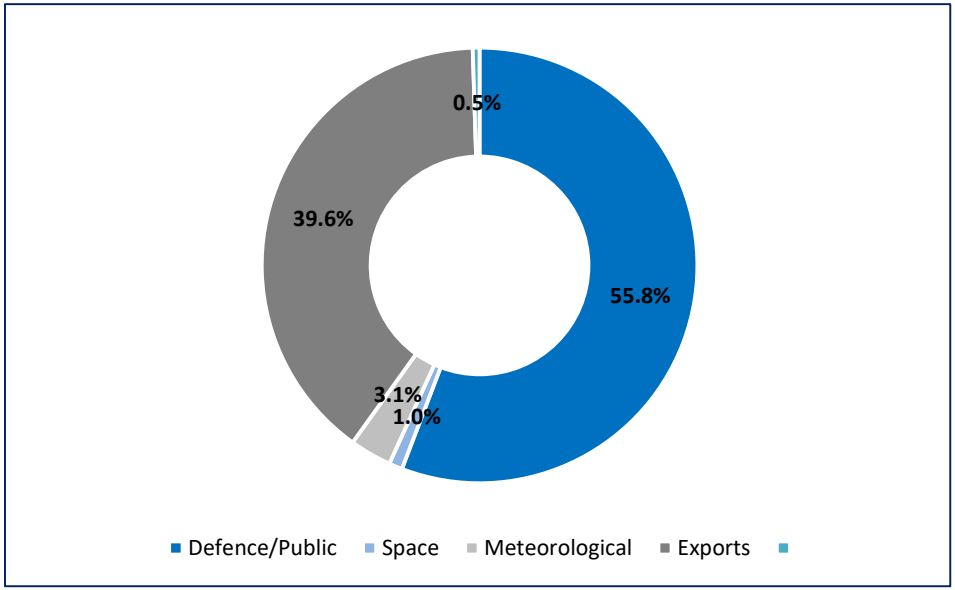
Source: Company, CEBPL

Historical Order book Build-Up (Rs.mn)



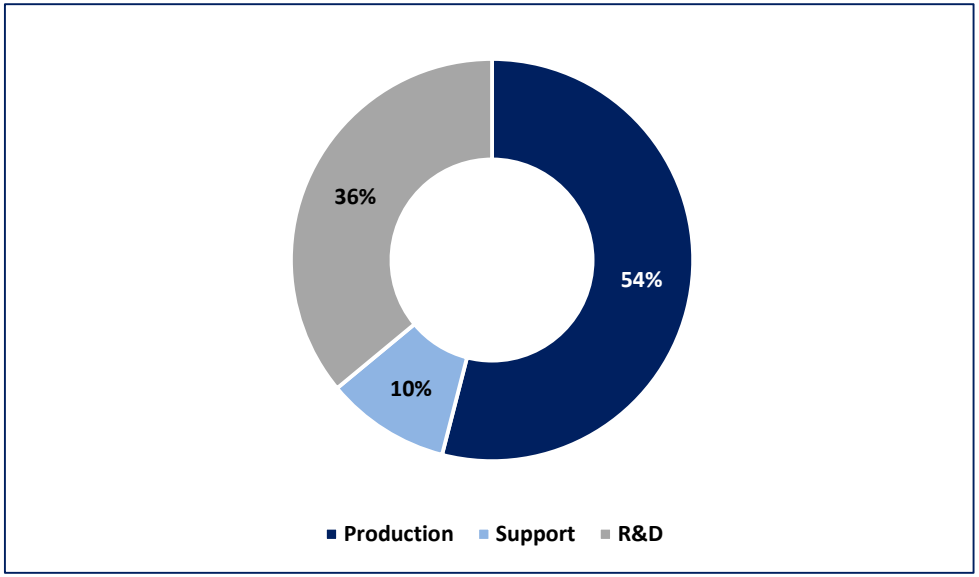
Source: Company, CEBPL

Segmental Revenue Break-up



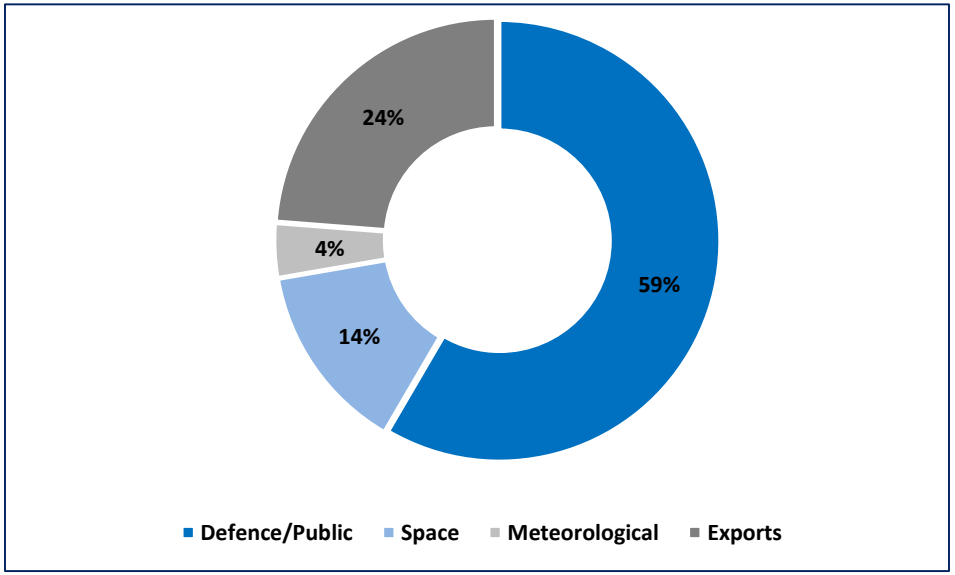
Source: Company, CEBPL

Total workforce (as on March 31st,2023) - 1,290



Source: Company, CEBPL

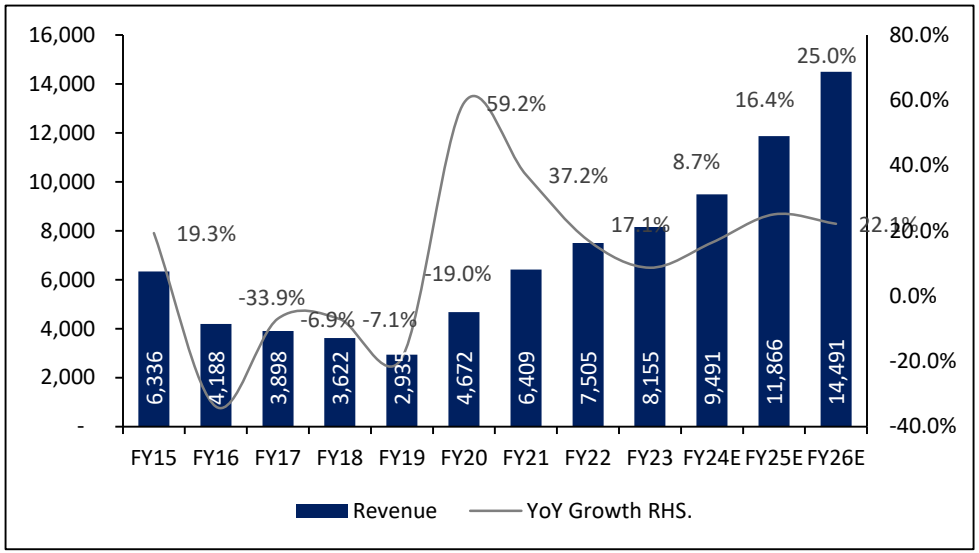
Diversified Order book (%)



Source: Company, CEBPL

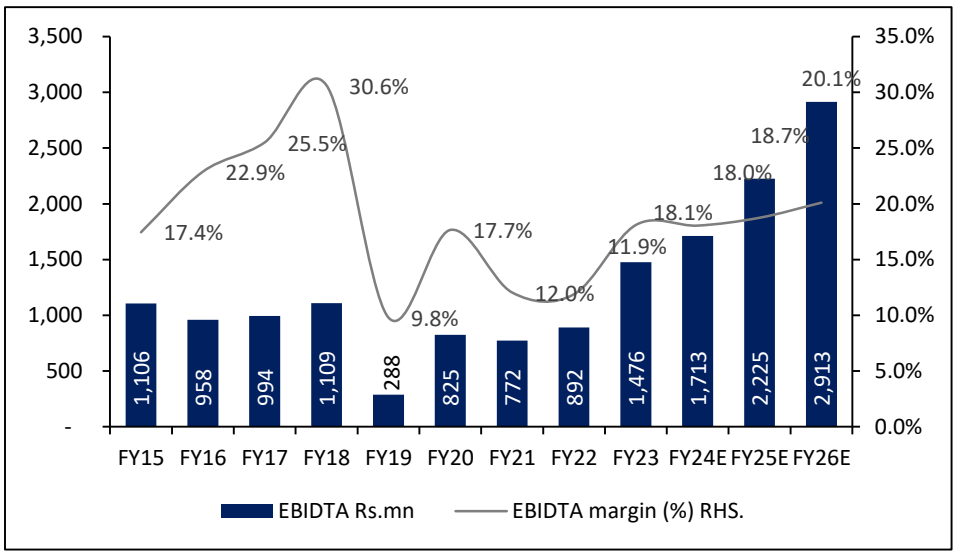
Story in charts

Revenue to increase led healthy order book



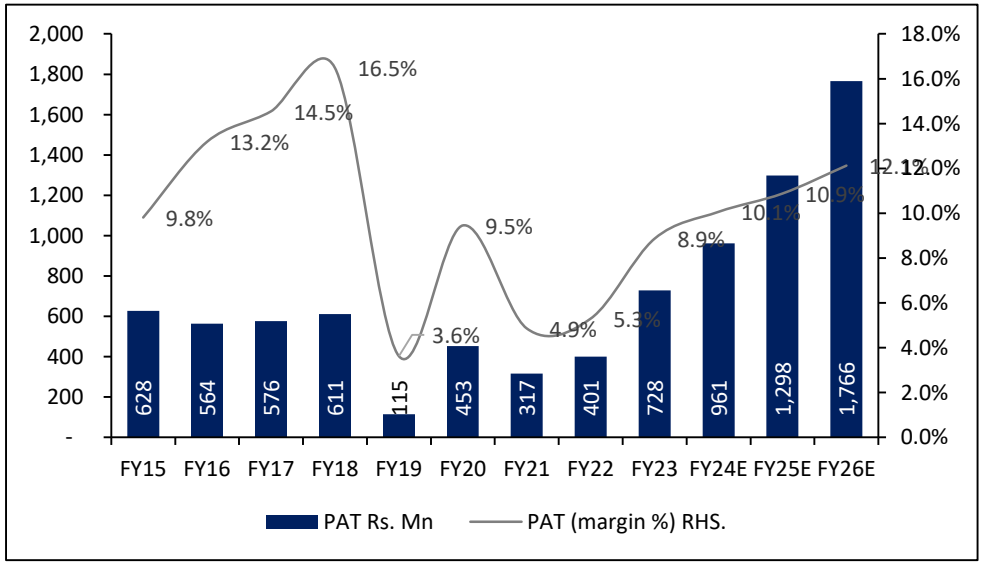
Source: Company, CEBPL

EBITDA Margin to rebound led by improving localization effort



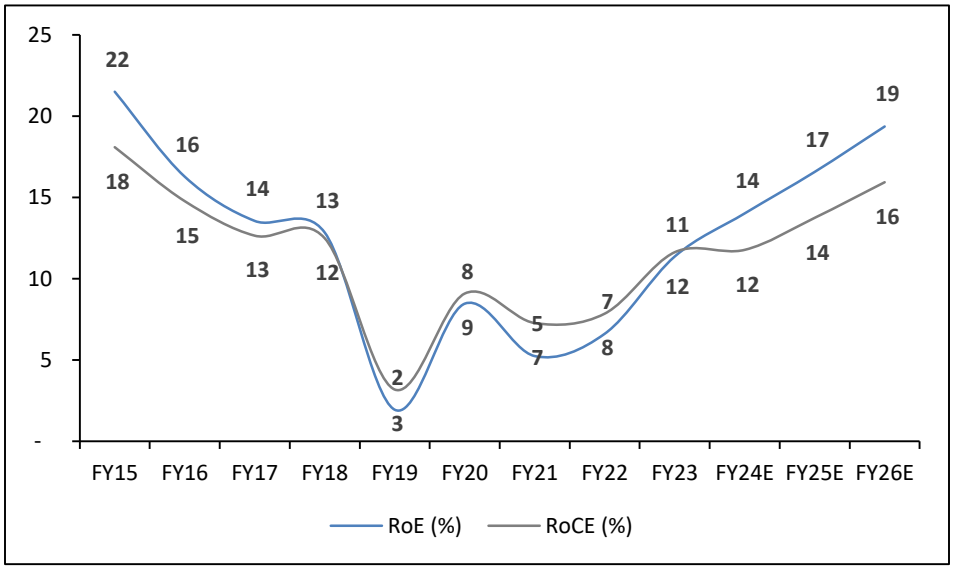
Source: Company, CEBPL

PAT (Rs. Mn.) and YoY (%) growth



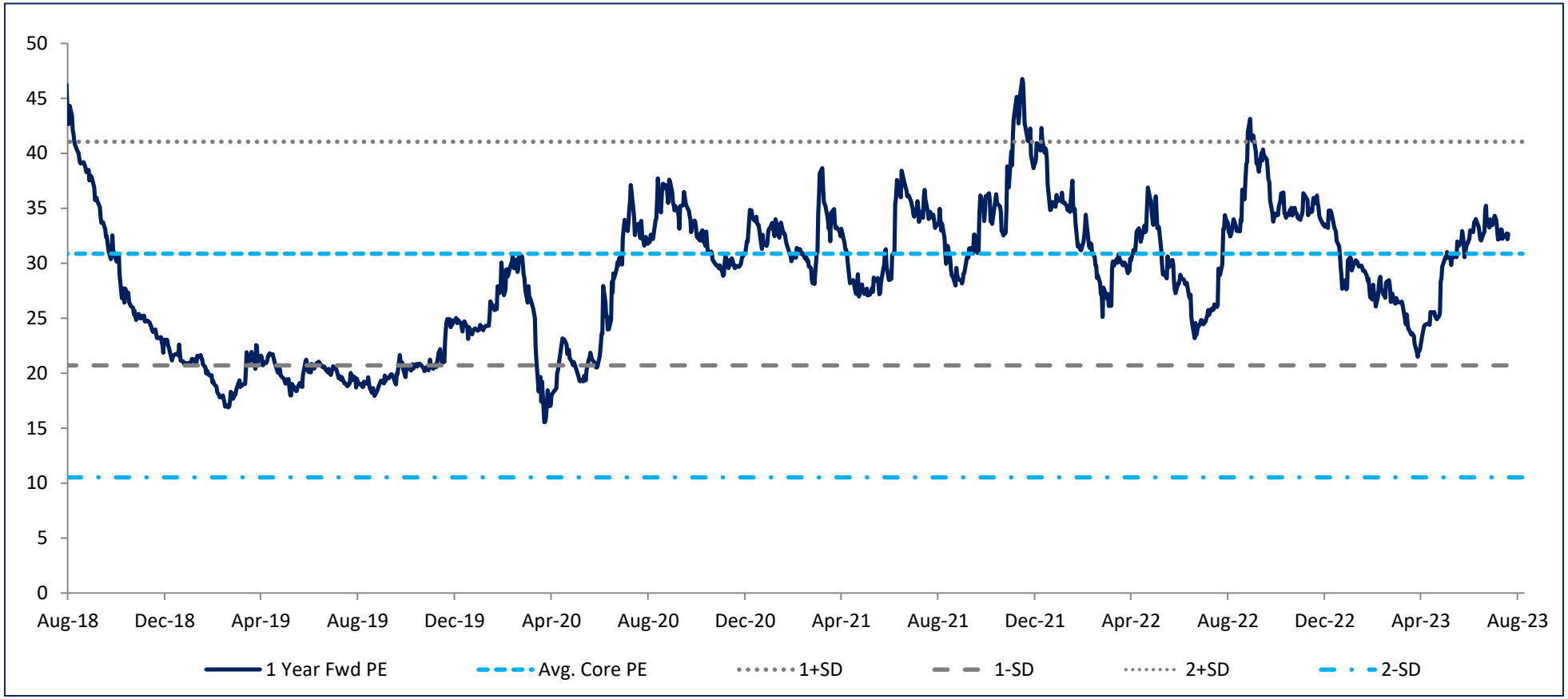
Source: Company, CEBPL

RoE and RoCE trend



Source: Company, CEBPL

PE Band



Source: Company, CEBPL

Financials

Astra Microwave Limited (INR mn)	FY22	FY23	FY24E	FY25E	FY26E
Income Statement					
Revenue	7,505	8,155	9,491	11,866	14,491
Gross profit	**2,233**	**2,972**	**3,436**	**4,289**	**5,316**
EBITDA	892	1,476	1,713	2,225	2,913
Depreciation	220	237	288	337	386
EBIT	672	1,240	1,425	1,888	2,527
Interest expense	211	305	203	223	245
Other Income	64	55	60	66	73
PAT	**401**	**728**	**961**	**1,298**	**1,765**
Adjusted PAT	379	698	961	1,298	1,765
EPS	4.0	7.4	10.1	13.7	18.6
NOPAT	514	912	1,068	1,416	1,895
Balance Sheet					
Net worth	5,856	6,426	7,283	8,382	9,853
Minority Interest	-	-	-	-	-
Deferred tax	(69)	(91)	(91)	(91)	(91)
Total debt	704	1,855	2,033	2,234	2,454
Other liabilities & provisions	439	745	747	821	903
Total Net Worth & liabilities	**6,930**	**8,935**	**9,972**	**11,346**	**13,120**
Net Fixed Assets	1,596	1,668	2,080	2,444	2,758
Capital Work in progress	1	22	150	151	152
Investments	139	110	121	133	147
Cash & bank balance	775	1,109	1,005	926	916
Loans & Advances & other assets	166	173	257	321	392
Net Current Assets	5,028	6,961	7,364	8,297	9,672
Total Assets	**6,930**	**8,935**	**9,972**	**11,346**	**13,120**
Capital Employed	6,560	8,281	9,316	10,615	12,307
Invested Capital	5,785	7,172	8,311	9,690	11,391
Net Debt	(71)	746	1,028	1,308	1,538
FCFF	856	(584)	378	511	828
Cash Flows					
Cash flows from Operations	1,147	(255)	1,206	1,212	1,529
Capex	(290)	(329)	(828)	(701)	(701)
FCF	856	(584)	378	511	828
Cash flows from Investing	(260)	(282)	(839)	(713)	(714)
Cash flows from Financing	(787)	748	(129)	(222)	(319)

Source: Company, CEBPL

Astra Microwave Limited	FY22	FY23	FY24E	FY25E	FY26E
Growth Ratios					
Revenue (%)	17.1	8.7	16.4	25.0	22.1
EBITDA (%)	15.6	65.5	16.0	29.9	30.9
PAT (%)	31.3	84.4	37.6	35.1	36.0
Margin ratios					
EBITDA margins (%)	11.9	18.1	18.0	18.7	20.1
PAT Margins (%)	5.0	8.6	10.1	10.9	12.2
Performance ratios					
OCF/EBITDA	1.3	(0.2)	0.7	0.5	0.5
OCF/IC	19.8	(3.6)	14.5	12.5	13.4
RoE (%)	6.5	10.9	13.2	15.5	17.9
ROCE (%)	10.2	15.0	15.3	17.8	20.5
Turnover Ratio (Days)					
Inventory	204	188	190	180	170
Debtors	100	127	120	115	120
Payables	27	21	20	21	21
Cash Conversion Cycle	207	262	245	227	221
Financial Stability ratios					
Net debt to Equity (x)	(0.0)	0.1	0.1	0.2	0.2
Net debt to EBITDA (x)	(0.1)	0.5	0.6	0.6	0.5
Interest Cover(x)	3.2	4.1	7.0	8.5	10.3
Valuation metrics					
Fully diluted shares (mn)	95	95	95	95	95
Price (INR)	382.0	382.0	382.0	382.0	382.0
Market Cap (INR mn)	36,269	36,269	36,269	36,269	36,269
PE(x)	96	52	37.7	27.9	20.5
EV (INR mn)	36,198	37,015	37,297	37,577	37,807
EV/EBITDA (x)	41	25	22	17	13
Book Value (INR/share)	62	68	77	88	104
Price to BV (x)	6.2	5.6	5.0	4.3	3.7
EV/OCF (x)	32	-145	31	31	25

Source: Company, CEBPL

Choice

Bharat Dynamic Limited

Readying for Supersonic growth

Defence Initiation

Choice Equity Broking Private Ltd.

Bharat Dynamic Limited

Readying for Supersonic growth

Defence Initiation

August 2023

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Bharat Dynamics Limited

OUTPERFORM

Readying for Supersonic growth

Bharat Dynamics Limited (BDL) is a government-owned defense company. It is primarily focuses on the manufacturing and development of munitions, missiles, and defense systems for the Indian Armed Forces and other customers. Some of the key products and services include:- **Missiles**: BDL is involved in the production of various types of missiles, including surface-to-air missiles, anti-tank guided missiles, and other tactical and strategic missile systems. **Ammunition**: The company manufactures a wide range of ammunition for different types of weapons used by the armed forces. **Countermeasure Systems**: BDL develops and produces countermeasure systems to protect military platforms from incoming threats like anti-aircraft and anti-ship missiles. **Electronic Warfare Systems**: BDL works on electronic warfare systems that include communication jamming equipment and other related technologies. **Upgrades and Maintenance**:

8X Order book to support long runway for growth: BDL is currently enjoying an 8x order book of its FY23 revenue which is comprised of various strategic programs like QRSAM, Akash- NS, Astra missiles, laser-guided rocket, etc. Currently, BDL has a healthy order book position of Rs. 20408 Crore as on 31st March 2023 out of which export order is around Rs.2588cr. which will keep the production lines engaged in the year ahead. Given the immense potential of BDL products for exports, the Company aims to expand its footprints in the global market. BDL has already made forays into the Export Market by exporting the Light Weight Torpedoes & Akash missile system to a friendly foreign country.

Indigenization policy pushes BDL to new high: BDL manufactures missiles under Technology of Transfer (ToT) from DRDO and from Foreign OEMs (Original Equipment Manufacturers). In the case of Foreign OEMs designed products, the Technology Transfer was only 63%, but through indigenization initiatives, BDL has achieved indigenization levels of more than 80% to 90% in most of the products. In the case of DROO-designed products, an indigenization level of more than 90% was achieved in most of the products. In recent years, your Company has been outsourcing to the extent of 60% across its projects barring critical items and weapon system integration. Further with the increase in Make-In India push company is benefiting from around 15-20 % increase in revenue.

Astra missile system is a cash cow for the company: Globally very few countries develop their own BVRAAM system and India is one of them. In the past India is dependent on foreign countries like Israel, Russia, and some other countries. BDL-made Astra missile system outperforms many imported in terms of technology and cost. BDL is currently working with Astra Mk2 and Astra Mk3 and Astra IR. Astra Mk2 developmental trails is completed. India has fully integrated this Astra Mk-1 system into most of the fighter jets. And also as per the government policy, all the fighter jets must be equipped with the Astra missile system.

BDL is building a bridge to scale a higher export revenue.: BDL is working with 3-4 friendly countries, targeting to export of Akash and Astra missile systems. And we are confident these talks will convert fruitful because BDL products are cost-effective and technologically far superior, and India build a very strong soft power after covid-19 pandemic. And also Indian weapons proven from Armenia and Azerbaijan war. The current share of exports is ~10% of revenue and we are expecting the company will maintain this trend in the near to mid-term. BDL is currently executing projects like Heavy Weight Torpedo, CM D5, ATGMs, Air to Air Missiles, and Air to Surface weapons under the MAKE IN INDIA category.

View and Valuation: BDL, with its over five decades of missile and allied defense equipment manufacturing experience, developed skill sets, and state-of-the-art infrastructure, is poised to enter new avenues of manufacturing, **covering a wide range of weapon systems such as Air-to-Air Missiles, Air-to-Surface Missiles, Air Defence Systems, Underwater Weapons, and Mines**. **Under its diversification program, BDL is poised to enter into the manufacturing of Rockets, Bombs, Engines for Cruise Missiles, UAV Launched Weapons,** etc. We believe BDL will play a very crucial role to meet the demand of armed forces and the export market. We have a positive view on the stock supported by 1) a strong order book (8x of FY23 revenue); 2) an increase in the execution of large orders between FY24-25; 3) a Make in India push and Export opportunity. We initiate coverage on the BDL with a target price of **RS.1,346 (32x of FY26E EPS)** with the rating of **OUTPERFORM**.

CMP (Rs)	**1137**
Target Price (Rs)	**1346**
Potential Upside (%)	**18.5**

Company Info

BB Code	BDL IN EQUITY
ISIN	**INE171Z01018**
Face Value (Rs.)	10
52 Week High (Rs.)	1278
52 Week Low (Rs.)	785.05
Mkt Cap (Rs bn.)	204.42
Mkt Cap ($ bn.)	2.46
Shares o/s (Mn.)/Free Float (%)	52/25
Adj. TTM EPS (Rs)	19.3
EPS FY26E (Rs)	42.1

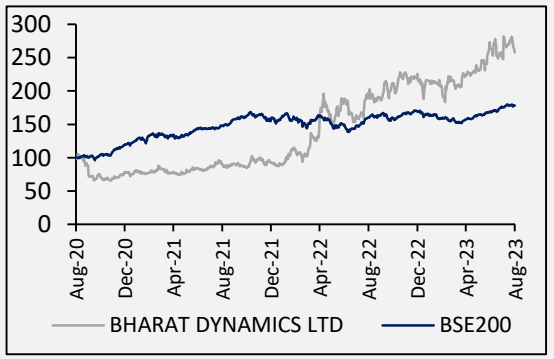
Shareholding Pattern (%)

	Jun-23	Mar-23	Dec-22
Promoters	74.93	74.93	74.93
FII's	3.36	2.83	3.24
DII's	13.78	14.10	12.39
Public	7.93	8.14	9.44

Relative Performance (%)

YTD	12M	6M	3M
BDL	13.6	2.6	(5.6)
BSE 200	23.3	(3.1)	(2.7)

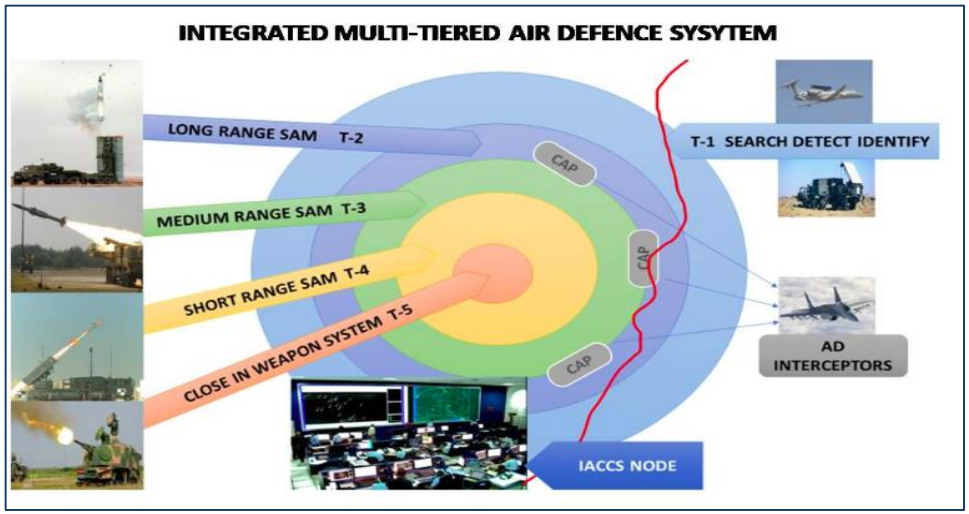
Rebased Price Performance



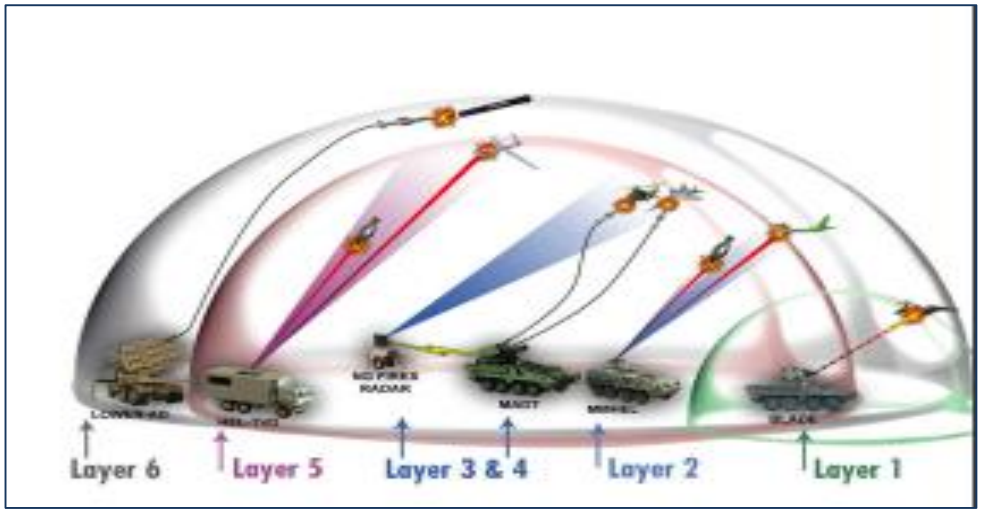
Integrated Air Defence System to keep missiles demand on high priority

- An integrated air and missile defense system that neutralizes any incoming threat is the backbone of securing and protecting most nations. Globalization, increased threat levels, and technological advances are driving a wave of new technologies aimed at quicker response, pinpoint accuracy, and deterrence of imminent attack. Smarter missiles and aerial defense systems create new demands on the electronics essential to ensuring that the mission is accomplished intelligently and effectively.
- In the fast-changing geo-political scenario, strategic preparedness and self-reliance are the new currency of defense. BMD fulfills all such criteria and creates a protective shield that has not only physical but also psychological effects on hostile nations.
- IAMD generally divides in 5-6 layers of protection to neutralize the incoming target.

BDL Air Defence System with thematic diagram.



Source: Company, CEBPL



Source: Company, CEBPL

~40% of product line related to ATGM

- Anti-Tank Guided Missiles ATGMs are primarily designed to hit Tanks, destroy heavily armored military vehicles. The missiles can be transported by a single soldier, to larger tripod-mounted weapons, which require a squad or team to transport and fire, to vehicle and aircraft mounted missile systems. This type of guided missiles rely on an electro-optical imager (IIR) seeker, a laser or a W-band radar seeker in the nose of the missile. These are 'fire-and-forget' missiles where the operator can retreat right after firing as there is no more guidance required.
- Currently BDL has made 40% of products line up is related to ATGM and related equipment. As we know, India is facing continuous threat from China and Pakistan. Indian army expect/prepare two front war, there is huge gap between India and China+Pakistan equipment. As per numbers India required appx 5000 tanks, ~14,000 armored fighting vehicles. To tackle this situation Indian army started using anti systems of Tank & armored vehicle system. **Currently BDL working some of this advance version of this systems. We are expecting that can be materialized in FY 26-27.**

Tank Mounted ATGM

Source: Company, CEBPL

Land Forces comparison

Indian Army

Equipment's	India	Pakistan	China	2 front war Short Fall
Tanks	4614	3742	5750	**4878**
Armoured fighting vehicles	8600	8710	14130	**14240**
Total artillery	2799	6308	7094	**10603**
Self-propelled artillery	100	1225	2720	**3845**
Rocket artillery	960	1738	3140	**3918**

Source: Company, CEBPL

ATGM used in battle field

Source: Company, CEBPL

ATGM testing Equipment

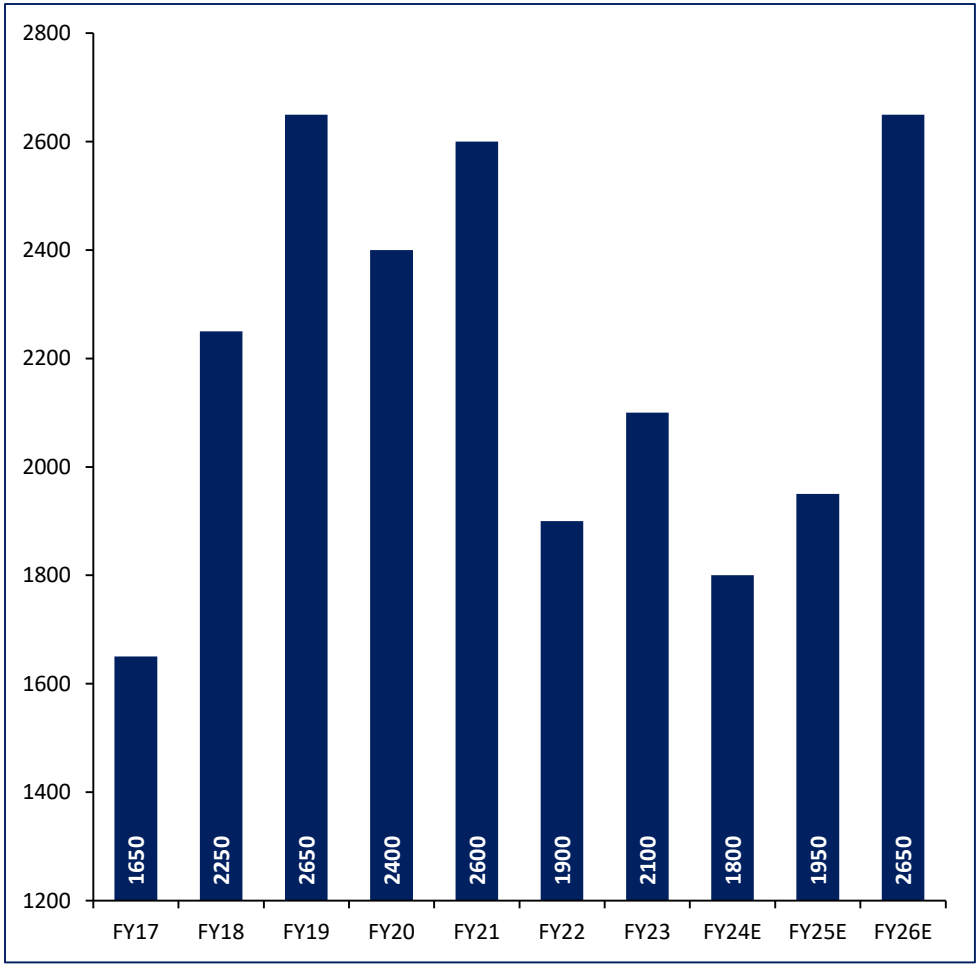
Source: Company, CEBPL

The Guided Missile and Torpedo Market – India

- As per Frost & Sullivan forecasts a market valuation $ 24.49 Billion in the 2017-26 time frame for guided missiles and torpedoes. This market will be driven by

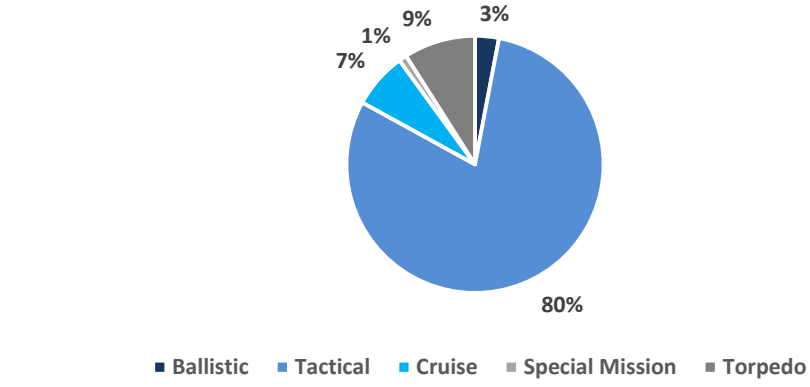
1. Committed and planned missile procurement underways such as that of S-400 Triumf Advanced Air Defence Systems, Barak-8 Surface to Air Missiles (SAMs), Hellfire Air to Surface Missiles, Harpoon Anti-ship Missiles, and heavyweight torpedoes etc.
2. Modernization and refurbishment of deployed and stored missile systems used on existing air, land, and sea-based platforms such as missile system upgrades in existing Talwar Class Frigates (FFGs), ATGM upgrades etc.
3. Missile procurements are expected as a result of procurement programs initiated during the forecast timeline such as new fighter procurements, Project 28A (Next Generation Missile Corvette), Project 17A (FFG), Project 75I (Diesel Electric Submarines with Air Independent Propulsion) etc.

Guided missile market in India in USD Mn.



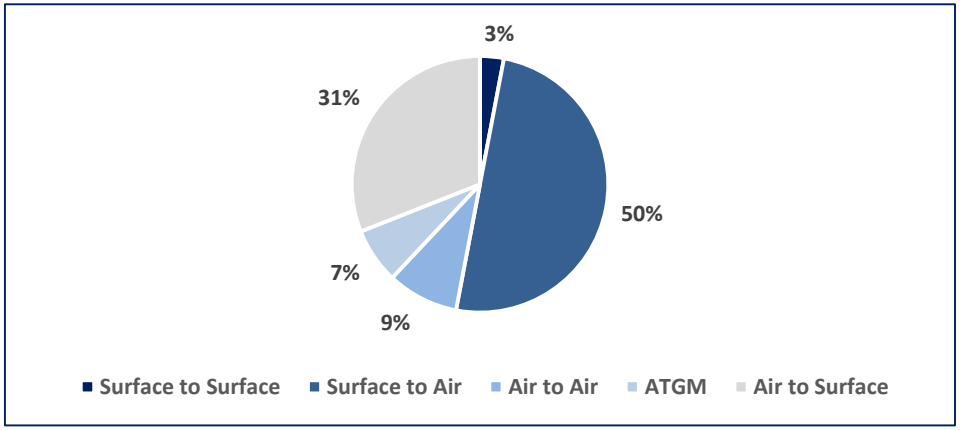
Source: Company, CEBPL

Total Market Split - (2017-26)



Source: Company, CEBPL

Tactical Segment Market Split - (2017-26)



Source: Company, CEBPL

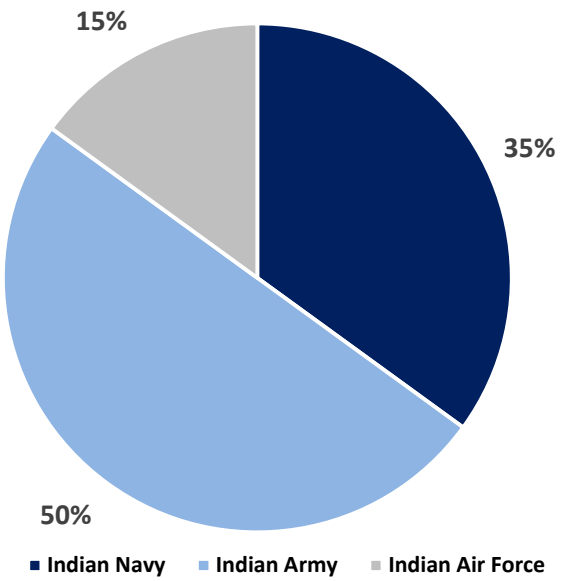
BDL made product mix

BDL is catering to the strategic needs of the Indian defense forces and is the sole supplier of various equipment and systems. A few upcoming big-ticket projects are in the pipeline & they started to materialize from FY25 onwards. BDL has a diversified product mix, 50% of its product cater to the Indian Army, followed by the Indian Navy with 35%, and 15% of products are for the Indian Air Force. BDL

Products related to Indian Navy

- TAL (torpedo advanced lightweight)
- Varunastra or heavy weight torpedo
- Dishani
- Multi - Influential ground mines (migm)
- (vlsrsam) vertically launched -short-range surface to air missile
- Anti - Submarine warfare suite (asw suite)
- C – 303 anti-torpedo decoy launching system
- C 303s anti-torpedo decoy launching system

% of products cater to defense forces



Source: Company, CEBPL

Products related to Indian Army

- (MRSAM) medium range surface - to - air missile
- (QRSAM) quick reaction surface -to- air missile
- Invar (3 ubk 20) atgm
- Konkurs – m atgm
- Milan - 2t atgm
- Unified launcher
- Flame
- Konkurs launcher test equipment (klte)
- Konkurs missile test equipment (kmte)
- Akash weapon system (aws)
- Amogha – iii atgm
- Man portable atgm
- Nagatgm

Products related to Indian Air Force

- Astra weapon system
- Counter measures dispensing system (cmds)
- (Saaw) smart anti-airfield weapon
- Helina (dhruvastra)

Source: Company, CEBPL

Strong Revenue growth prospects

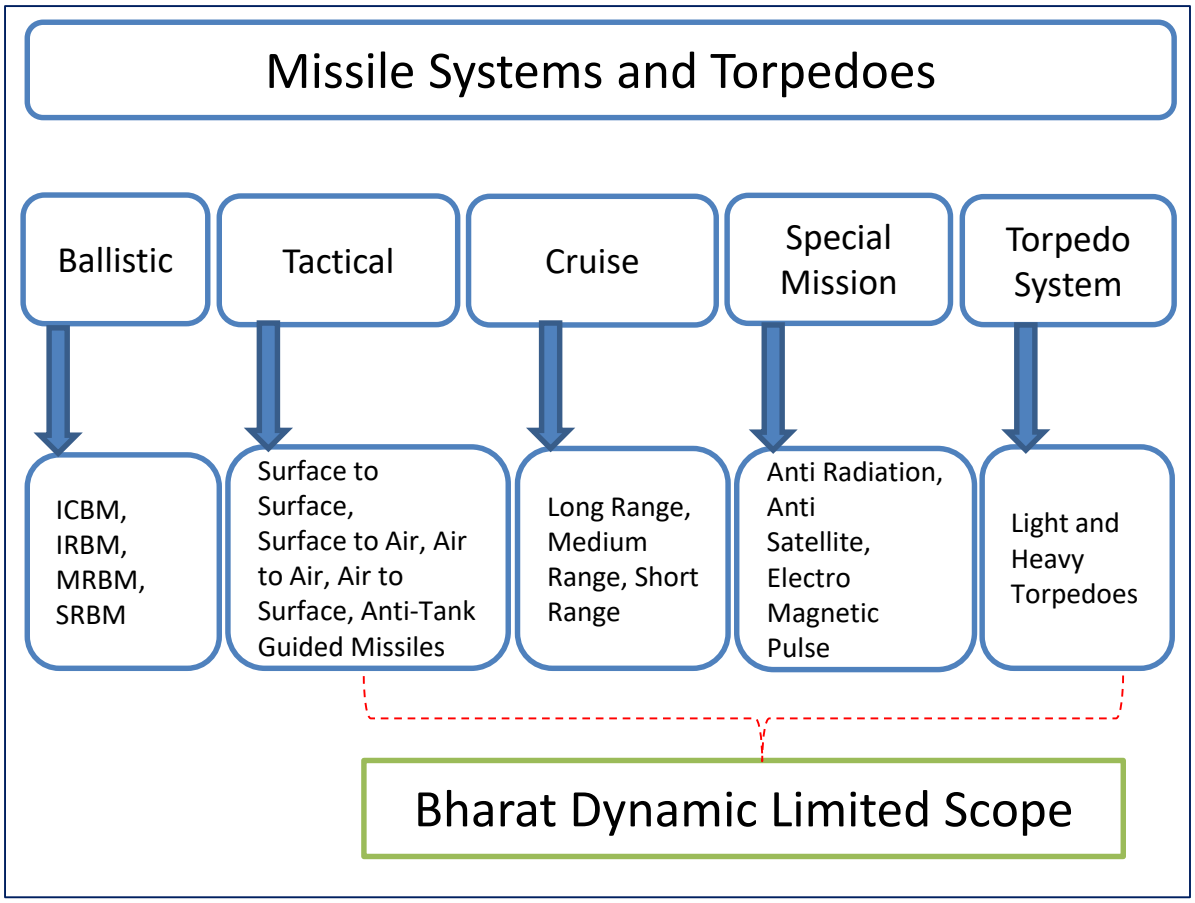
- Currently, BDL has a healthy order book position of Rs. 20408 Crore as on 31st March 2023 out of which export order is around Rs.2588cr. which will keep the production lines engaged in the year ahead. Given the immense potential of BDL products for exports, the Company aims to expand its footprints in the global market. BDL has already made forays into the Export Market by exporting Light Weight Torpedoes to a friendly foreign country.

- Further company is setting up its sixth manufacturing facility In India, which will be coming up at Jhansi in the UP Defence Corridor. The Jhansi unit will be manufacturing Propulsion System which will be used in all Anti-Tank Guided missiles and futuristic missiles manufactured by the Company, This is an important step towards the backward Integration plan being implemented to further strengthen the capability to deliver world-class weapon systems to the customers. We expect to post the commissioning of this plant margin profile will change and will also help to ramp up in volume.

Future Programs

Source: Company, CEBPL

Segmentations and key Definitions



Source: Company, CEBPL

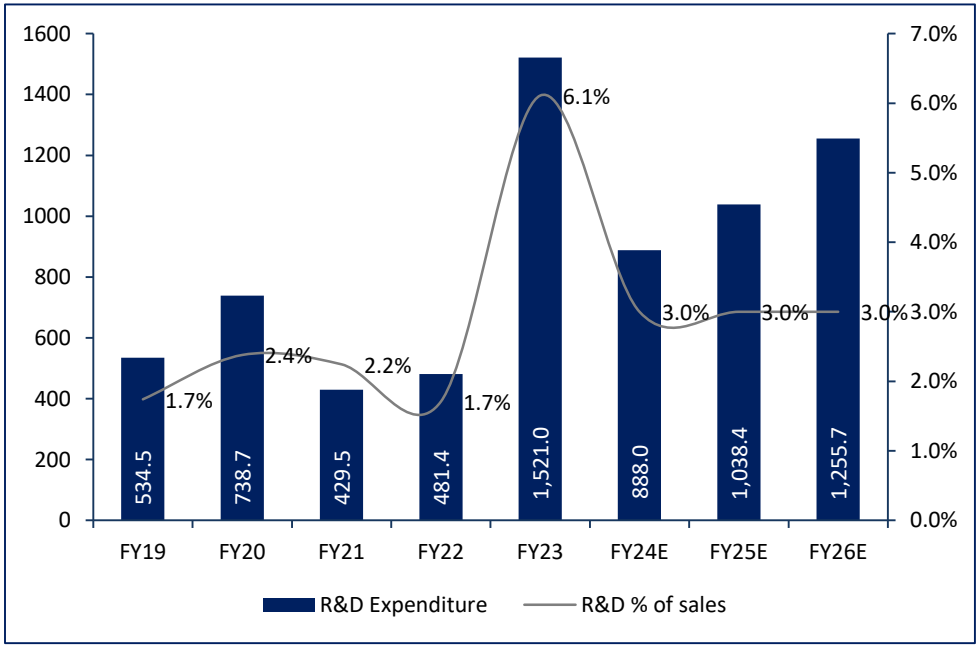
Focus on Research & Development

- The Company believes that the recent changes to government policies allowing private sector companies to participate in defense contracts will provide significant competition. In order to address these challenges, SOL intends to increase its R&O activities to develop Innovative products for Its customers. BDL's R&D expenses have also grown up significantly over the past few years.
- The Company believes that the development of new products will enable it to diversify its offerings and mitigate product dependencies. The Company has also established the missile development group with the objective to design and develop missiles. BDl is striving to develop Artificial Intelligence based products. Thrust is also being given to efforts towards the Innovation of in-house developed products. Synergy is being maintained between the Industry and academia to sustain a balance between experience and knowledge industry.

Improving margins

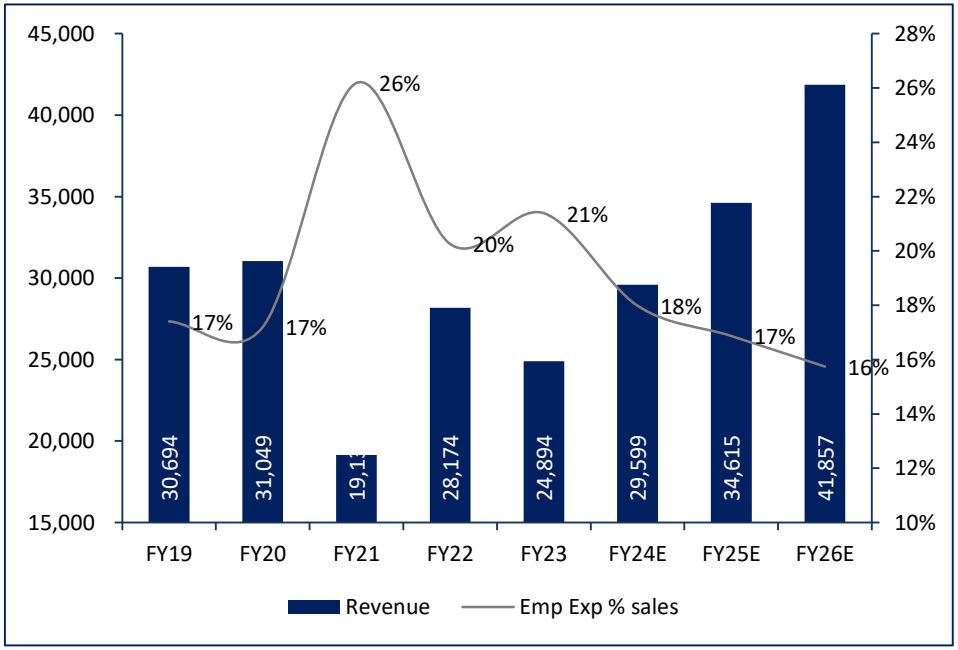
- The company has taken various initiatives to make systems more agile, effective, cost-efficient and to be competitive.
- BDL is focusing on improving operational efficiency to improve its margins. We are expecting the EBITDA margins to stand is around 20%.
- BDL is Changing its business strategy as an OEM manufacturer and outsources sub-systems and components to Tier-I & Tier-II suppliers.
- Focusing on reducing its employee cost, in FY21 the employee cost was 26% of sales vs 21% in FY23, furthermore we are expecting the employees will reduced to 16-17% by FY26.
- The company is trying to engage its production line fully. Hence engaged in talks with local customers as well as with foreign customers.

R&D cost as a percentage of sales



Source: Company, CEBPL

Reducing employee cost, would support margins further.



Source: Company, CEBPL

Expected Orders

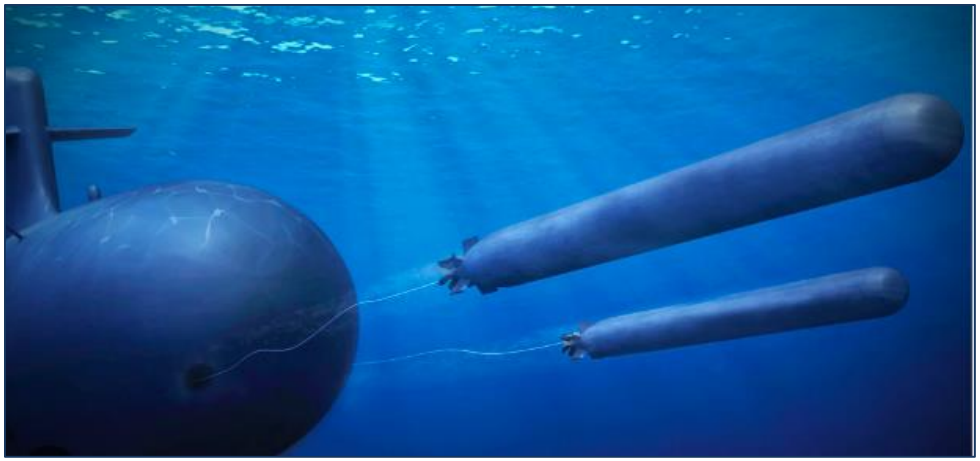
Future Order	Expected year of realization of Order	In association with
QRSAM	2025-2026	DRDO
AKASH NG SAM	2026-2027	DRDO
VLSRSAM	2026-2027	DRDO
DHRUVASTRA/HELINA ATGM	2025-2026	DRDO
NAG ATGM	2025-2026	DRDO
MPATGM	2026-2027	DRDO
LRLACM	2027-2028	DRDO
SAAW	2024-2025	DRDO
Electrical Heavy Weight Torpedo	2026-2027	DRDO
Advanced Light Weight Torpedo	2025-2026	DRDO
MIGM (Multi Influence Ground Mines)	2025-2026	DRDO
SONOBUOY	2025-2026	DRDO
ULPGM	2024-2025	DRDO
AMOGHA III ATGM	2026-2027	In House R&D
Drone Fired Missile	2026-2027	In House R&D
Drone Fired 3.5 Kg Bomb	2024-2025	In House R&D
Drone Fired 1 Kg Bomb	2024-2025	In House R&D
LBRM	2023-2024	Foreign Collaboration
MISTRAL	2026-2027	Foreign Collaboration
ASRAAM	2026-2027	Foreign Collaboration
SPIKE ER2	2024-2025	Foreign Collaboration
122 mm GRAD ROCKETS	2025-2026	Foreign Collaboration
70MM LGR	2024-2025	Foreign Collaboration

Source: Company, CEBPL

Growing export opportunity in line with

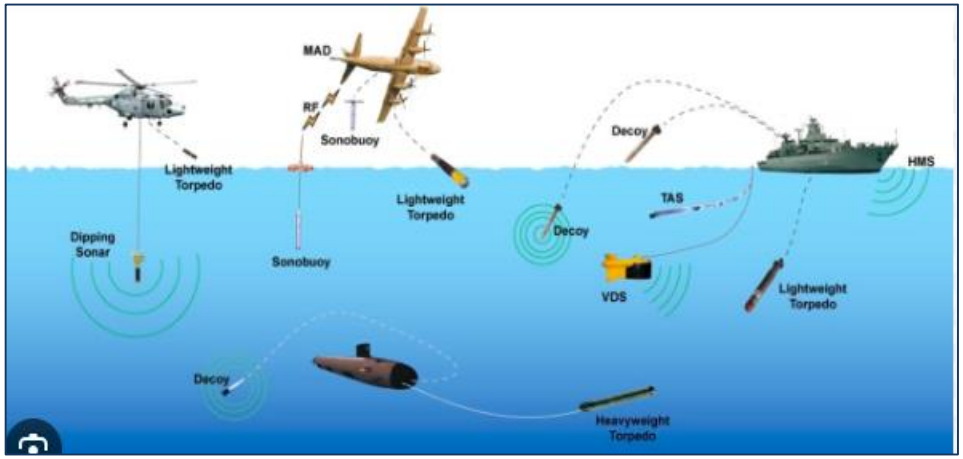
- BDL primarily caters to the requirements of the Indian armed forces. With encouragement from the Government of India, BDL is actively exploring export markets.
- Further, with the Cabinet Committee on Security (CCS) clearance of the Akash Weapon System for Export to nine countries, BDL is geared up to take up the export orders. BDL has already received export leads for Akash from a few countries. BDL is therefore set to expand its customer base In the international market. The company has adequate production facilities to cater to the domestic as well as export demand for its products.

Underwater Torpedos



Source: Company, CEBPL

Anti-Submarine Warfare Suite (ASW Suite)



Source: Company, CEBPL

Akash Missle System

Source: Media search, CEBPL

Astra Weapon System

Source: Media search, CEBPL

New Generation Weapons

- **New Generation Weapons:** BDL intends to leverage its experience to develop weapons such as new generation SAMs, ATG Ms, Air to Air Missile Systems and heavyweight torpedoes which will enable the Company to further increase its revenues. BDL is also the joint development partner-cum production agency with the DRDO for the next generation of ATGMs, Air t o Air Missile and SA Ms. B DL has also entered into several MoUs and non-disclosure agreements with various companies for developing new products and transfer of technologies.

Sr . No	BDL Products	Department	Applications	Role	Launch platform
1	Tal (torpedo advanced lightweight)	Naval	Underwater weapon	Anti-submarine	Ship / helicopter / fixed wing aircraft
2	Varunastra or heavy weight torpedo	Naval	Shallow / deep waters.	Anti-submarine	ship launched
3	Dishani	Naval	ASW UNDERWATER SENSOR SYSTEM	acoustic spying	Helicopter / fixed wing aircraft
4	Multi - influential ground mines (migm)	Naval	UNDERWATER SENSOR	detect marine vessels	
5	(Vl - sr sam) vertically launched - short-range surface to air missile	Naval	AERIAL TARGET	missiles, aircraft, guided bombs, helicopters	Surface to aiir missile
6	Anti - submarine warfare suite (asw suite)	Naval	Underwater complete protection	Sonar, underwater communication, altas – x, pdds –x, directing gear, atds –x, umacs – micro, nacs, rocket launcher (optional), fcs & launch tube (torpedo), lwt – xp, sonar dome, hull modification, rockets (optional)	ship
7	C – 303 anti-torpedo decoy launching system	Naval	Underwater weapon	Anti-submarine	externally on the pressure hull of the submarine and below the submarine superstructure.
8	C 303s anti-torpedo decoy launching system	Naval	Underwater weapon	Anti-submarine	externally on the pressure hull of the submarine and below the submarine superstructure.

Source: Company, CEBPL

New Generation Weapons Continued..

Sr . No	BDL Products	Department	Applications	Role	Launch platform
9	(Mrsam) medium range surface - to - air missile	TRI	Aerial Target	Missiles, aircraft, guided bombs, helicopters	vertically launched supersonic missile
10	(Q r sam) quick reaction surface -to- air missile	TRI	Aerial Target	Missiles, aircraft, guided bombs, helicopters	vertically launched supersonic missile
11	Invar (3 ubk 20) atgm	Army	Land Targets- moving or static	Infantry weapon	gun barrel of t90 tank
12	Konkurs – m atgm	Army	Land Targets- moving or static	Infantry weapon	Ground launch
13	Milan - 2t atgm	Army	Ground Launcher	Infantry weapon	Man-portable
14	Unified launcher	Army	Ground Launcher- moving or static	Infantry weapon	Man-portable
15	Flame	Army	Ground Launcher- moving or static	Infantry weapon	Man-portable
16	Konkurs launcher test equipment (klte)	Army	Test Equipment	Infantry testing equipment	Man-portable
17	Konkurs missile test equipment (kmte)	Army	Test Equipment	Infantry testing equipment	Man-portable
18	Akash weapon system (aws)	Army	Surface to Air Missile	HELICOPTERS, FIGHTER AIRCRAFTS, UAVS ETC	mobile platforms
19	Amogha – iii atgm	Army	Ground Launcher	Infantry weapon	Man-portable
20	Man portable atgm	Army	Ground Launcher	Infantry/parachute weapon	Man-portable
21	Nag atgm	Army	Ground Launcher	Infantry weapon	Man-portable
22	Astra weapon system	IAF	Aerial Target	SU-30 MKI	Air - to - air missile
23	Counter measures dispensing system (cmds)	IAF	Aerial incoming threat	ALL AIRCRAFT AND HELI	Helicopters, fighter aircrafts
24	(Saaw) smart anti-airfield weapon	IAF	air-to-surface weapon	CAPABLE OF ENGAGING GROUND TARGETS	Fighter aircrafts
25	Helina (dhruvastra)	IAF and Army	Land Surface	AIR TO SURFACE MISSILE SYSTEM	Helicopter launched nag

Source: Company, CEBPL

Key Milestones

Year	Description
1970	Established as PSU under Ministry of Defence
1971	Production of 1st Generation ATGM
1983	Prime Production Agency for IGMDP
1985	Production of 2nd Generation ATGM
1989	Production of Strategic ATGM
1992	Upgraded to Schedule B
1994	Strategic Missile Production
2000	Categorized as Mini Ratna-1 Company
2004	Production of Naval Version of Strategic Missile
2007	Production of Anti Torpedo Decoy System
2008	Production Agency for Long Range SAM & Heavy Weight Torpedo
2010	Foundation stone laid for third manufacturing unit of BDL Visakhapatnam
2011	Hon'ble President of India, Smt. Pratibha Devi Singh Patil lays the foundation stone for BDL's unit at Amravati, Maharashtra
2013	Third manufacturing unit of BDL inaugurated at Visakhapatnam
2016	Completed buy back of shares
2018	Initial Public Offer and listing of the company
2019	Handed over MRSAM to Indian Air force
2020	Golden Jubilee Year
2021	MoU with naval group France & Naval group India and MoU with Rafale Advanced Defenec System ltd. (Naval Division)
2022	BDL & RAFAEL have signed an MoU for developing and manufacturing an Anti-Torpedo Decoy System for Indian Navy under the make-II

Source: Company, CEBPL

Key Management Personnel's

Name and Designation	Brief description
Shri Nuka Srinivasulu Director (Finance) with Addl. Charge of Chairman and Managing Director	Shri Nuka Srinivasulu became Director (Finance) of Bharat Dynamics Limited (BDL) on 01 July 2020, with additional responsibility as Chairman and Managing Director. With over 30 years of experience, including 24 years at BDL, Srinivasulu implemented Indian Accounting Standards, and formulated policy.
Shri. Dr BHVS Narayana Murthy Director General (Missiles and Strategic Systems)	Shri. Dr. BHVS Narayana Murthy, a distinguished defense scientist, and Distinguished Scientist, has been appointed as the Government Nominee Director of our Company. He is renowned for his research and development of advanced avionics technologies for defense and aerospace applications in India. Murthy has spearheaded the Research Centre Imarat (RCI), an avionics laboratory of Dr APJ Abdul Kalam Missile Complex, and has played a vital role in the development and demonstration of various missile systems. He has also led the conceptualization, design, and development of Smart Anti-Airfield Weapons (SAAW) and laid the foundation for long-range smart guided systems with precision strike capabilities. Murthy has been conferred with Honorary Fellowships from the Computer Society of India, the Indian National Academy of Engineering (INAE), and the Indian Society of Systems for Science and Engineering.
Shri Anurag Bajpai Joint Secretary (DIP)	Shri Anurag Bajpai, a 1994 Indian Forest Service graduate, has extensive experience in forestry, environment policy, energy, women empowerment, and global governance. He has worked in various countries, including Indonesia, South Korea, Germany, the United Kingdom, Italy, Denmark, Belgium, Malaysia, Bahrein, and Brazil. Bajpai has traveled across 32 countries and has been instrumental in forestry clearance reforms, formulated the first Wind Energy Policy and focused on skill development, education, infrastructure development, and women empowerment. He has held senior positions in Manipur's Forest Department and the Department of Commerce and Industries.
Shri. Commodore A. Madhavarao Director (Technical) with Addl.Charge of Director (Production)	Shri. Commodore A. Madhavarao has been appointed as Director (Technical) of Bharat Dynamics Limited (BDL) on January 2, 2023. With over three decades of experience in the Indian Navy, he has been instrumental in monitoring R&D activities, production, and lifecycle support of flagship products. He has also played a key role in developing infrastructure and signing contracts with foreign companies and the Ministry of Defence. Madhavarao has experience in frontline operations, niche technology operations, maintenance, project management, and planning at higher management levels.

Manufacturing Units.

Currently company has three manufacturing units, located at Kanchanbagh, Hyderabad in Telangana State, Bhanur, Sangareddy District in Telangana State and Visakhapatnam in Andhra Pradesh. The company is in the process of **setting up facilities at Amaravati, Maharashtra, Ibrahimpatnam, Telangana and Jhansi** (UP).

1. Hyderabad Unit: BDL's headquarters is located in Hyderabad, Telangana. The Hyderabad unit serves as the main manufacturing facility for a wide range of defense equipment and systems. It is responsible for the production of missiles, such as the Akash surface-to-air missile, and other defense products.
2. Bhanur Unit: BDL has another manufacturing unit at Bhanur, near Hyderabad. This unit specializes in the production of BrahMos missiles. BrahMos is a supersonic cruise missile jointly developed by India and Russia. BDL's Bhanur unit is involved in the assembly, integration, and testing of BrahMos missiles.
3. Visakhapatnam Unit: BDL has a manufacturing unit in Visakhapatnam, Andhra Pradesh. This unit is primarily engaged in the production of torpedoes, underwater weapons, and other defense systems. It manufactures various torpedoes, including lightweight torpedoes and heavyweight torpedoes, which are crucial for naval defense.

Source: Company, CEBPL

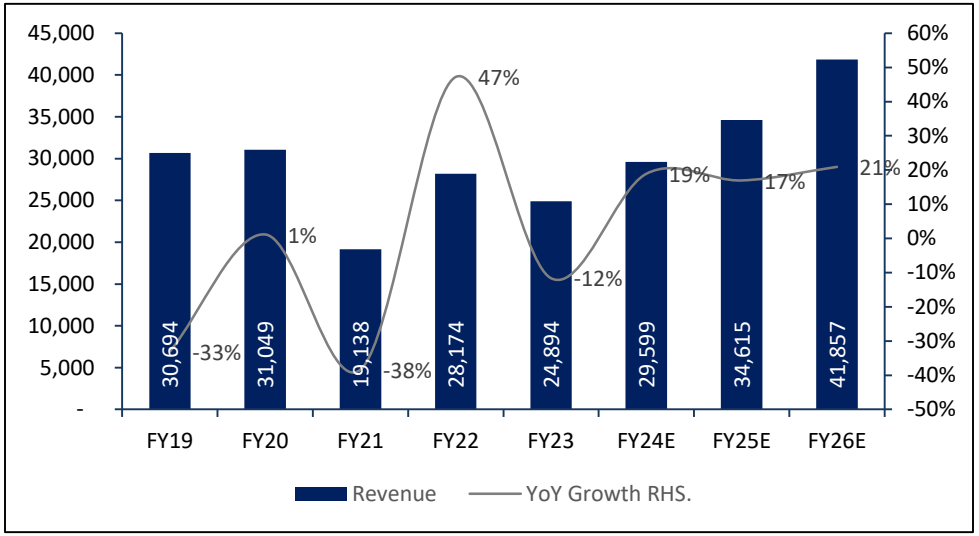
Shareholding pattern (%)

Names	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23
President of India	74.93	74.93	74.93	74.93	74.93	74.93	74.93	74.93	74.93	74.93	74.93	74.93
FIIs:		0.12	0.28	0.41	1.43	1.73	2.11	2.40	2.88	3.24	2.83	3.36
Abu Dhabi Investment Authority					1.16	1.32	1.34					
DIIs:	17.68	17.76	17.52	17.92	17.56	17.38	16.38	14.59	13.00	12.39	14.10	13.78
HDFC trustee company limited				6.57				7.38	7.02	6.93	8.76	6.53
HDFC flexi cap fund			5.96		6.76	7.47	7.74					
Life insurance corporation of india :	10.50	10.50	10.23	9.93	8.70	8.00	6.25	5.21	2.80	1.61	1.61	1.88
HDFC equity fund	3.94	4.53										
Max life insurance company limited									1.14	1.25	3.00	2.82
State bank of india:	1.22											
Government:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Public:	7.13	7.20	7.27	6.75	6.08	5.96	6.59	8.08	9.18	9.43	8.15	7.92

Source: Company, CEBPL

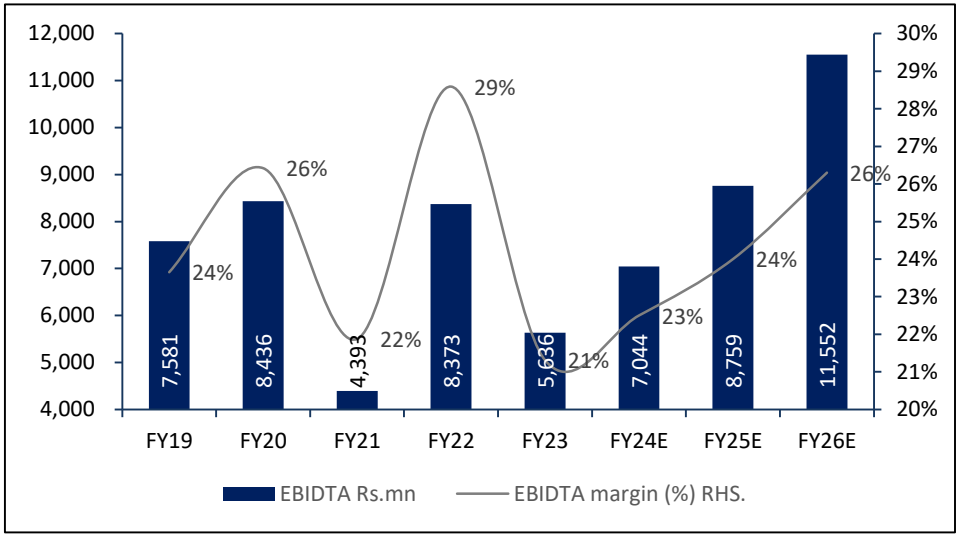
Story in charts

Healthy revenue growth supported strong order book



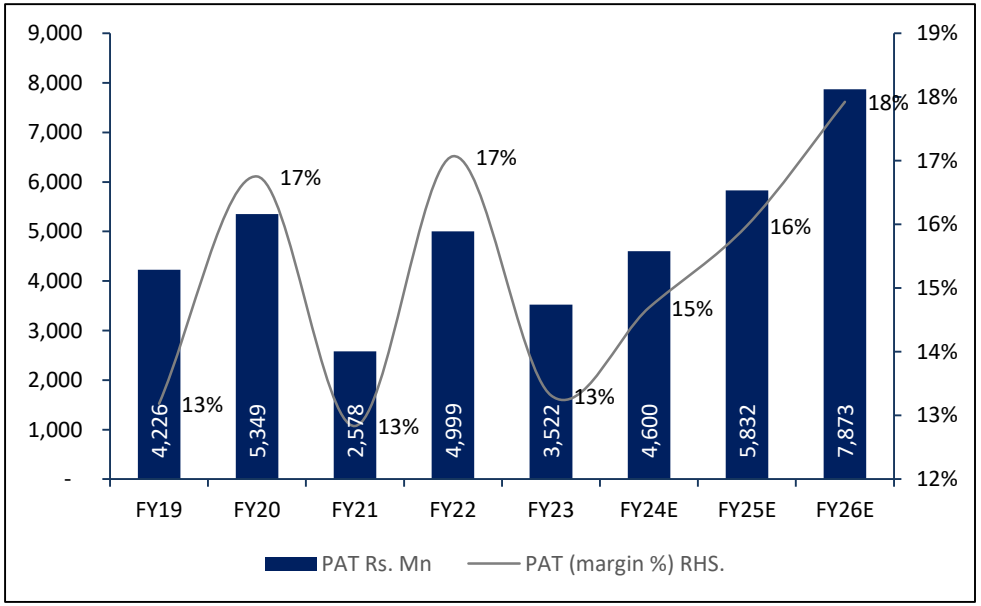
Source: Company, CEBPL

EBITDA Margin to rebound on cost control measures



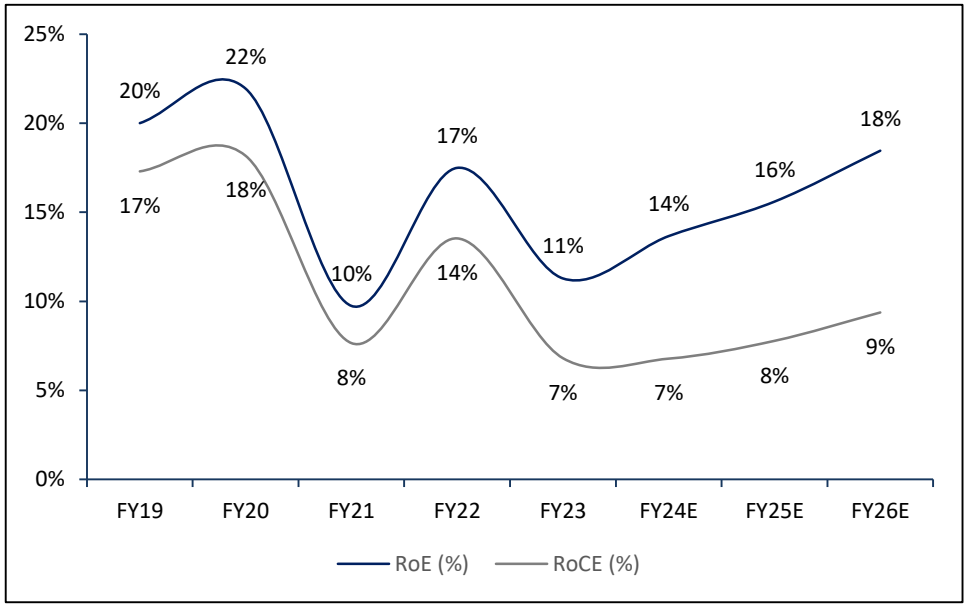
Source: Company, CEBPL

PAT (Rs. Mn.) and YoY (%) growth



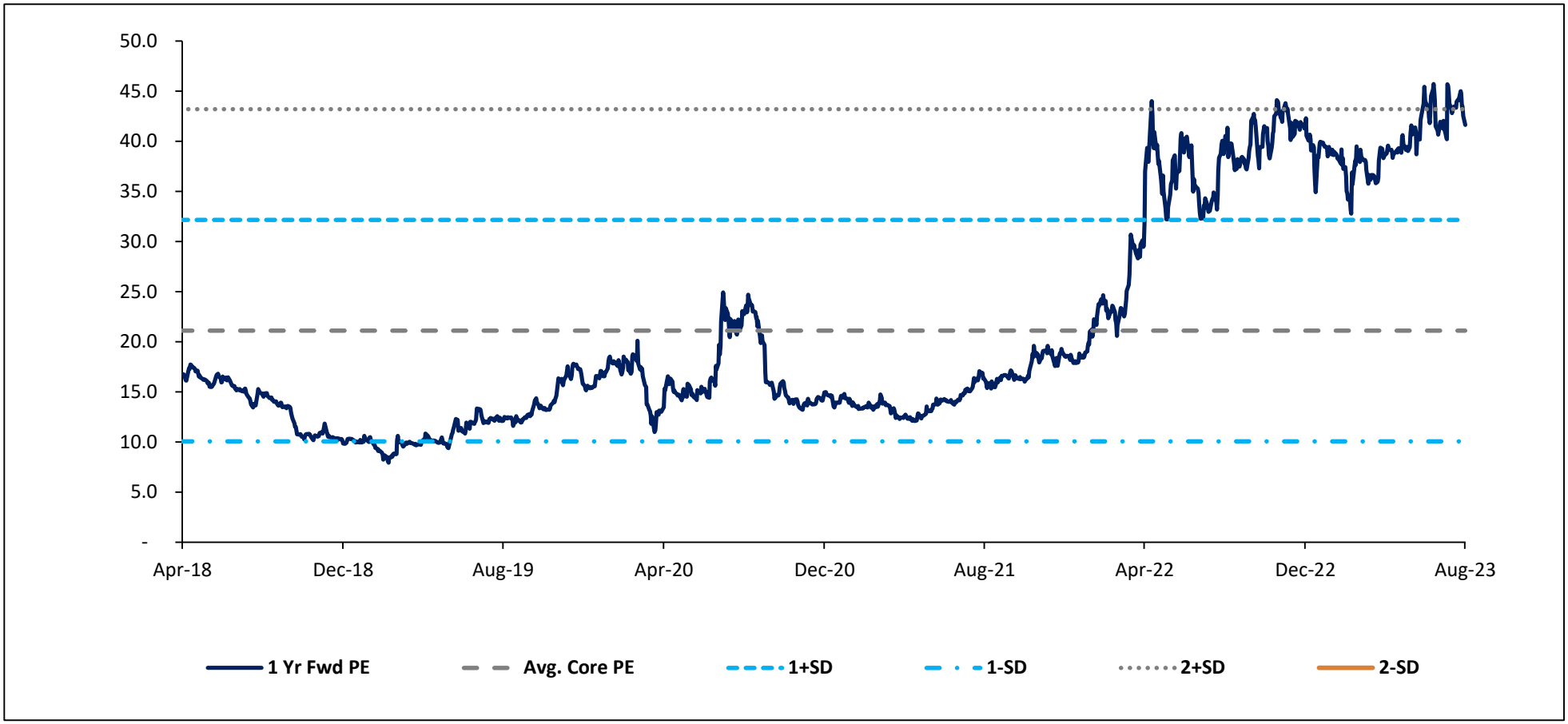
Source: Company, CEBPL

RoE and RoCE trend



Source: Company, CEBPL

PE Band



Source: Company, CEBPL

Bharat Dynamics Limited (INR mn)	FY22	FY23	FY24E	FY25E	FY26E
Income Statement					
Revenue	28,174	24,894	29,599	34,615	41,857
Gross profit	**16,384**	**12,981**	**15,040**	**17,645**	**21,651**
EBITDA	7,261	4,082	5,335	6,879	9,264
Depreciation	904	773	911	983	1,055
EBIT	6,357	3,309	4,424	5,896	8,209
Interest expense	34	45	-	-	-
Other Income	1,112	1,554	1,709	1,880	2,068
EO Items	(336)	-	-	-	-
PAT	**4,999**	**3,522**	**4,600**	**5,832**	**7,708**
Adjusted PAT	5,236	3,522	4,600	5,832	7,708
EPS	28.6	19.2	25.1	31.8	42.1
NOPAT	4,477	2,419	3,318	4,422	6,157
Balance Sheet					
Net worth	30,306	32,115	35,221	39,559	45,590
Minority Interest	-	-	-	-	
Deferred tax	-	-	-	-	-
Total debt	-	-	-	-	-
Other liabilities & provisions	9,523	32,550	12,925	15,466	20,793
Total Net Worth & liabilities	**39,828**	**64,665**	**48,146**	**55,025**	**66,384**
Net Fixed Assets	8,170	7,537	7,726	7,943	8,088
Capital Work in progress	407	744	150	150	151
Investments	-	-	-	-	-
Cash & bank balance	18,995	38,589	17,534	19,727	26,662
Loans & Advances & other assets	1,829	2,443	2,882	3,372	4,081
Net Current Assets	29,422	53,942	37,388	43,560	54,064
Total Assets	**39,828**	**64,665**	**48,146**	**55,025**	**66,384**
Capital Employed	30,306	32,115	35,221	39,559	45,590
Invested Capital	11,310	(6,474)	17,687	19,832	18,929
Net Debt	(18,995)	(38,589)	(17,534)	(19,727)	(26,662)
FCFF	4,276	20,220	328	1,700	4,494
Cash Flows					
Cash flows from Operations	5,297	21,303	834	2,900	5,695
Capex	(1,020)	(1,083)	(506)	(1,200)	(1,201)
FCF	4,276	20,220	328	1,700	4,494
Cash flows from Investing	(5,730)	(11,710)	(506)	(1,200)	(1,201)
Cash flows from Financing	(1,485)	(1,714)	(1,494)	(1,494)	(1,677)

Bharat Dynamics Limited	FY22	FY23	FY24E	FY25E	FY26E
Growth Ratios					
Revenue (%)	47.2	(11.6)	18.9	16.9	20.9
EBITDA (%)	110.6	(43.8)	30.7	28.9	34.7
PAT (%)	103.1	(32.7)	30.6	26.8	32.2
Margin ratios					
EBITDA margins (%)	25.8	16.4	18.0	19.9	22.1
PAT Margins (%)	18.6	14.1	15.5	16.8	18.4
Performance ratios					
OCF/EBITDA	0.7	5.2	0.2	0.4	0.6
OCF/IC	46.8	(329.1)	4.7	14.6	30.1
RoE (%)	17.3	11.0	13.1	14.7	16.9
ROCE (%)	21.0	10.3	12.6	14.9	18.0
Turnover Ratio (Days)					
Inventory	214	267	250	240	230
Debtors	39	27	50	55	44
Payables	72	68	60	55	53
Cash Conversion Cycle	135	225	247	253	240
Financial Stability ratios					
Net debt to Equity (x)	(0.6)	(1.2)	(0.5)	(0.5)	(0.6)
Net debt to EBITDA (x)	(2.6)	(9.5)	(3.3)	(2.9)	(2.9)
Interest Cover(x)	185.9	72.9	NA	NA	NA
Valuation metrics					
Fully diluted shares (mn)	183	183	183	183	183
Price (INR)	1,137.0	1,137.0	1,137.0	1,137.0	1,137.0
Market Cap (INR mn)	2,08,412	2,08,412	2,08,412	2,08,412	2,08,412
PE(x)	40	59	45.3	35.7	27.0
EV (INR mn)	1,89,417	1,69,824	1,90,878	1,88,685	1,81,751
EV/EBITDA (x)	26	42	36	27	20
Book Value (INR/share)	165	175	192	216	249
Price to BV (x)	6.9	6.5	5.9	5.3	4.6
EV/OCF (x)	36	8	229	65	32

Source: Company, CEBPL

Choice

Hindustan Aeronautics Limited

Intercepting the new growth territory

Defence Initiation

Choice Equity Broking Private Ltd.

Hindustan Aeronautics Limited

Intercepting the new growth territory

Defence Initiation

August 2023

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Hindustan Aeronautics Limited

ADD

Intercepting the new growth territory

HAL is an Indian aerospace and defense company, primarily engaged in designing and developing fighter aircraft, training aircraft, and transport aircraft; civil and military helicopters. The company also manufactures special test equipment, aircraft engines, ground handling equipment, avionics, accessories, etc. HAL has manufactured various aircraft and helicopters either Indigenously or under license such as the MiG 21FL/M/BIS, MiG-27, Avro, Jaguar, Dornier 228, Su-30 MkI, Hawk Mk 132, Cheetah and Chetak helicopters. And also provide MRO service for various aircraft and engine such as Mirage 2000, An-32, MiG-29, and Su-30 MKI. So far it has manufactured 4300+ aircraft and 5300+ engines.

Investment Thesis

- **Expanding the capacity of the R&O facility(Raising revenue share from MRO Division**): HAL's MRO share to overall revenue is around 60% (Avg. between FY19-23) and it was around 70% in FY23. Given the increase in the induction of fighter aircraft, trainer aircraft, and helicopters (total 660+) in the last 4-5 years, we expect MRO revenue share to grow at a healthy rate over the next 5-6 years. Further, HAL is also looking to expand the MRO facility capacity from the current 25 to 30 over a period of 3-4 years. Further ageing of the fleet like Mig-21, Mig-29, Mirage-2000, etc, Helicopter MRO front HE JV new Goa plant will be commissioned end of 2023 with a capacity of 50/year and will be boosted to 150/year in the medium term, and Power Plant Services, and Systems, Accessories & Avionics, etc. will contribute to MRO overall revenue for HAL. We expect HAL's MRO revenue to grow at 7-8% CAGR over FY23-27.
- **Healthy Manufacturing outlook:** The current order book position is 3x FY23 revenue of the company ~82,000 crores, which includes ~26,000 crores this year fresh orders Rs.48,000 crores worth of projects negotiation is completed and are talks in an advanced stage, concluded in 6 to 10 months. IAF is currently struggling with just 31 squadrons when at least 42 are required to tackle our enemies. As per the IAF chief, IAF will acquire 450 fighter aircraft in two decades. The induction plan includes 83 Tejas Mark 1A which is under process, in the medium to long term 108 Tejas Mark-2, 114 multi-role fighter aircraft and 126 AMCA (Advance Medium Combat Aircraft), and 70 HTT-40 trainer aircraft. This induction plan is executed over the next two decades. Furthermore, HAL is planning to take advantage of the UDAAN scheme, a regional connectivity program for tier-2 cities in India. It has obtained certification from DGCA for a variant of its Do-228. As we know that currently Russia is engaged in war with Ukraine, so most of the countries that are using Russian platforms are in talks with the Indian counterpart for MRO and spare supplies.
- **R&D capabilities**: HAL with its dedicated R&D team (10 R&D centers co-located with production divisions across the country) carry various capabilities like absorption of Transfer of Technology (ToT), Design & Development of utility and combat helicopters, upgradation of various aircraft like re-engineering, avionics upgrade, and weapon system integration and to provide MRO services. In order to ensure the same, the company has been annually spending of 6-7% on R&D and increasing R&D reserve from 10% to 15% of PAT to keep an adequate reserve for future R&D programs. The company **has** been making dedicated contributions towards R&D costs over the years and is expected to continue doing the same in the future. Company key development future includes AMCA, TEDBF, CATS system, UAV LCA-MK-II, DO-228, and NRUAV.
- **Outlook & Valuation:** We believe HAL is a pure play on India's Defence capex cycle and Indigenization theme as the company faces limited competition from the private sector due to the high capital intensity and long gestation periods for developing manufacturing capabilities in the sector. We can say that the center's Aatma Nirbhar Bharat vision has come as a big boon for India's defense industry in particular. HAL is definitely a direct beneficiary of it. The company also has healthy order inflows with an outstanding order book of Rs. 82,000 crore as on March 31, 2023, providing high revenue visibility in the medium to long term, while also indicating HAL's strong competitive and strategic positioning. Further, there is a strong visibility of future orders with new orders anticipated for LUH, LCH, Su-30, and HTT-40 in the near to medium term. HAL also working on new development programs like AMCA, LCA-MK2, TBDEF, and UAV program We initiate coverage with a TP of **Rs.4345 (22X of Sep-25E EPS)**. Recommend **ADD.**

CMP (Rs)	**3825**
Target Price (Rs)	**4345**
Potential Upside (%)	**13.6**

Company Info

BB Code	HNAL IN EQUITY
ISIN	**INE066F01012**
Face Value (Rs.)	10
52 Week High (Rs.)	3999.1
52 Week Low (Rs.)	2003.6
Mkt Cap (Rs bn.)	1257.06
Mkt Cap ($ bn.)	15.18
Shares o/s (Mn.)/Free Float (%)	35/28
FY23 EPS (Rs)	174.3
FY26E EPS (Rs)	210

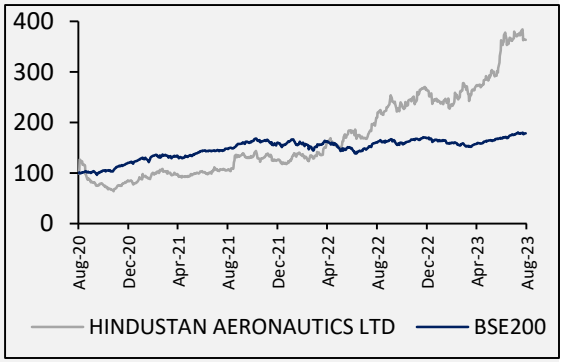
Shareholding Pattern (%)

	Jun-23	Mar-23	Dec-22
Promoters	71.64	71.65	75.15
FII's	11.90	9.07	7.14
DII's	10.64	13.93	12.72
Public	5.82	5.35	4.99

Relative Performance (%)

YTD	1 YEAR	2 YEAR	3 YEAR
HAL	73	247	263
BSE 200	11	20	78

Rebased Price Performance



Ageing fleet, Upgrade and induction of new aircraft provide stable MRO revenue visibility:

- Over the last three decades, HAL successful achieve various milestone and proven its capabilities by indigenously developing military aircraft and helicopters like (Tejas, Ajeet, Marut, HPT-32, Kiran) as well by manufacturing under license with foreign partners (like MiG 21FL/M/BIS, MiG-27, Jaguar, Dornier-228, Su-30MkI, Hawk-k132).
- We expect as new aircraft and helicopter delivered to forces R&O opportunity for HAL would also increase in tandem, Further upgrade of several fleet like MIG-59, Mirage-200 is also providing and strong MRO order book visibility. Further It is also in discussion with foreign country for MRO service of aircraft like SU-30MKI and increasing its capacity from current to 22/p.a. aircraft to 26/PA aircraft over next 2-3 years. On engine (Al-31FP), HAL looking to increase is R&O capacity from current 76 to 105 over next 2 years. Additionally, it is also expanding MRO capacity by 50 engine (Helicopter) at GOA.

Aircraft name	Craft Image	No of aircrafts in service	No of aircraft under up gradation programme	Service life
MiG-29		69	69	A program valued at USD 900 million has been initiated to undertake the first life extension program for the MiG-29 aircraft. Starting from 2025 onwards, the MiG-29 aircraft are expected to reach their expiration, making this life extension initiative crucial for their continued service.
Su-30MKI		260	150	The Super Sukhoi program, with a budget of USD 4 billion for upgrades, is set to deliver its first aircraft by 2025. Full-scale upgrades are scheduled to commence from 2027 onwards.
SEPECAT Jaguar				The Jaguar aircraft has served the Indian Air Force (IAF) for over 30 years. In 2018, India resorted to cannibalizing 31 airframes acquired from France, along with 2 airframes each from the UK and Oman, in addition to several engines and hundreds of critically needed spare parts to maintain squadron serviceability. The process of phasing out the Jaguar fleet is expected to begin in 2025 and conclude by 2032.
Mirage-2000			51	The plan to upgrade India's Mirage 2000 fighter aircraft at a cost of nearly USD 2.5 billion was scheduled for completion by the end of 2021. However, it is likely to miss the deadline, with only half of the aircraft having undergone the upgrade so far. The agreement for the upgrade was made in 2011 and involves India's state-owned Hindustan Aeronautics Limited (HAL), along with Dassault Aviation, Thales, and MBDA.

Source: Company, CEBPL

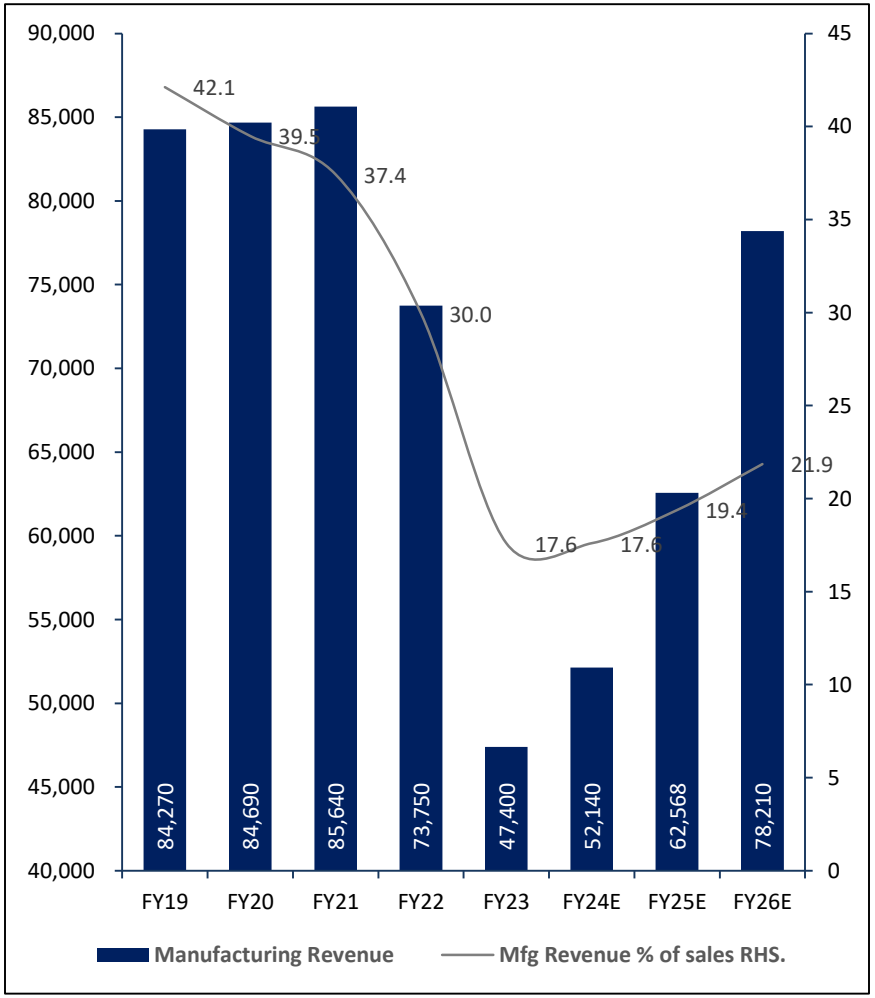
Addition of new craft by indigenization/ToT making a long runway for HAL

- India is looking to increase its aircraft capacity to 324 from current 255. Additionally, production of new aircraft like Su-30, LCA Tejas, MK-I and MK-II (414 engine) expected to deliver over next 6-7 years.
- In Helicopter, MoD plan to add and upgrade various crafts in future like ULH, ALH replacement of Chetak and Cheetah. 1000 no of helicopter will be manufactured from Tumukur plant alone. Furthermore Indian multi role helicopter (IMRH program) will replace Mi-17, started from 2028.

Aircraft	Squadrons in 22-23	Squadrons in 35-36	No of crafts	Remarks
Rafale	2	4	60	2ndsquadron being inducted
Sukhoi-30MKI	13	13	260	13thsquadron being built in Nashik
Tejas Mark 1	2	2	40	Entered IAF service
Tejas Mark 1A	Nil	4	83	To be built by 2025-27
Tejas Mark 2	Nil	6	108-180	Phase-1 by 2028-29, Phase-2 by 2032
AMCA	Nil	7	126	To be built by 2035-36
MRFA	Nil	6	114	Estimated cost USD 20 Billions, To be built by 2035
TEDBF	Nil	6	100	2031-32
Helicopters LUH	Nil		110	
LCH			90-95	
Drones	Nil			

Source: media search, CEBPL

Mfg revenue % of sales in Mn. INR



Source: Company, CEBPL

Addition of new craft by indigenization/ToT making a long runway for HAL (cont..)

- Since independence, India is largely depended on imports of equipment and technical support from foreign countries like Russia, the USA, and France, and most of the critical equipment (aircraft, tanks, artillery guns), and technology were largely imported and was also relying on services and maintenance part as well.
- However, since 2016 government Make in India intuitive in defense opened up various opportunities for domestic manufacturers, SMEs, and start-ups to participate in various programs offered to domestic manufacturers. HAL, with its inherent technical and R&D capabilities and association with DRDO, BEL, ISRO, DRL, IAF, and Navy has been a proven partner to deliver advanced Aircraft and other equipment.
- India is looking to increase its aircraft capacity to 324 from the current 255. Additionally, the production of new aircraft like Su-30, LCA Tejas, MK-I, and MK-II (414 engine) with 80% indigenization components, is expected to deliver over the next 6-7 years. In Helicopter, MoD plan to add and upgrade various crafts in the future like ULH, and ALH replacement of Chetak and Cheetah. 1000 no of helicopters will be manufactured from the Tumkur plant alone. Furthermore, the Indian multi-role helicopter (IMRH program) will replace Mi-17, starting in 2028. Tejas MkII will have 90% indigenization components.

Aircraft	No of crafts	Remarks
Tejas Mark 2	108-180	Phase-1 by 2028-29, Phase-2 by 2032
AMCA	126	Induction starts from 2032-33.
MRFA	114	To be built by 2035
TEDBF	100	Induction starts from 2031-32.
Helicopters LUH	110	Acquisition is under process
LCH Prachand	145	Acquisition is under process
IMRH-Indian multirole Helicopter	550	Replaced Mi-17, starts from 2028.
MQ-9Bs	31	General Atomics - Aeronautical Systems (GA-ASI) — manufacturer of MQ-9B — has signed a partnership to manufacture parts of the MQ-9B drones. Additionally, HAL has signed a deal with GA-ASI to establish a Maintenance, Repair and Overhaul (MRO) facility on the sidelines of Aero India 2023.
Drones	97	MALE, DRDO made Tapas MALE Drone.

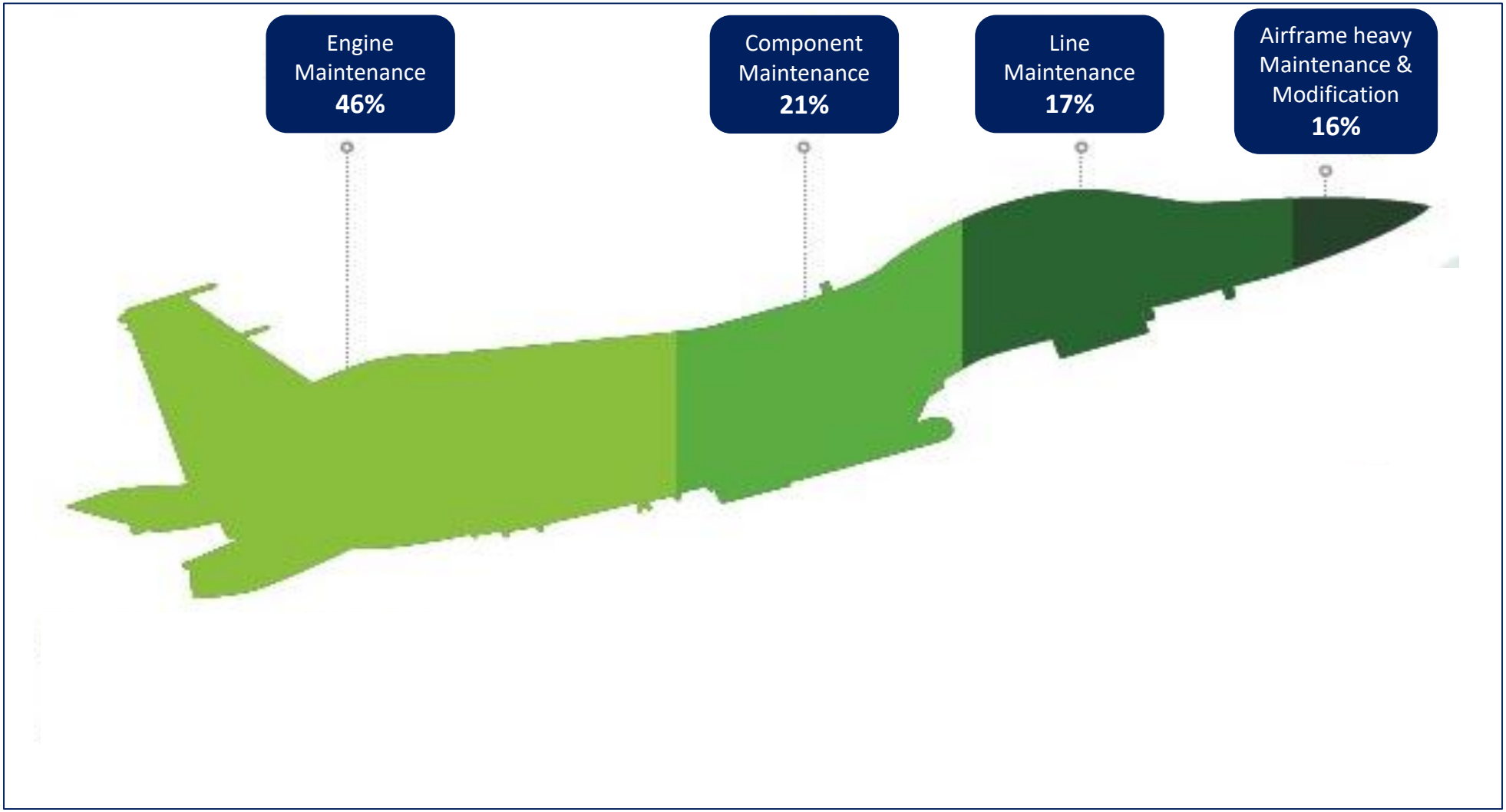
Source: Company, CEBPL

We expect overall opportunity to be in the range of $80-100bn spread over 7-8 years

MRO segment continue to support the healthy revenue growth

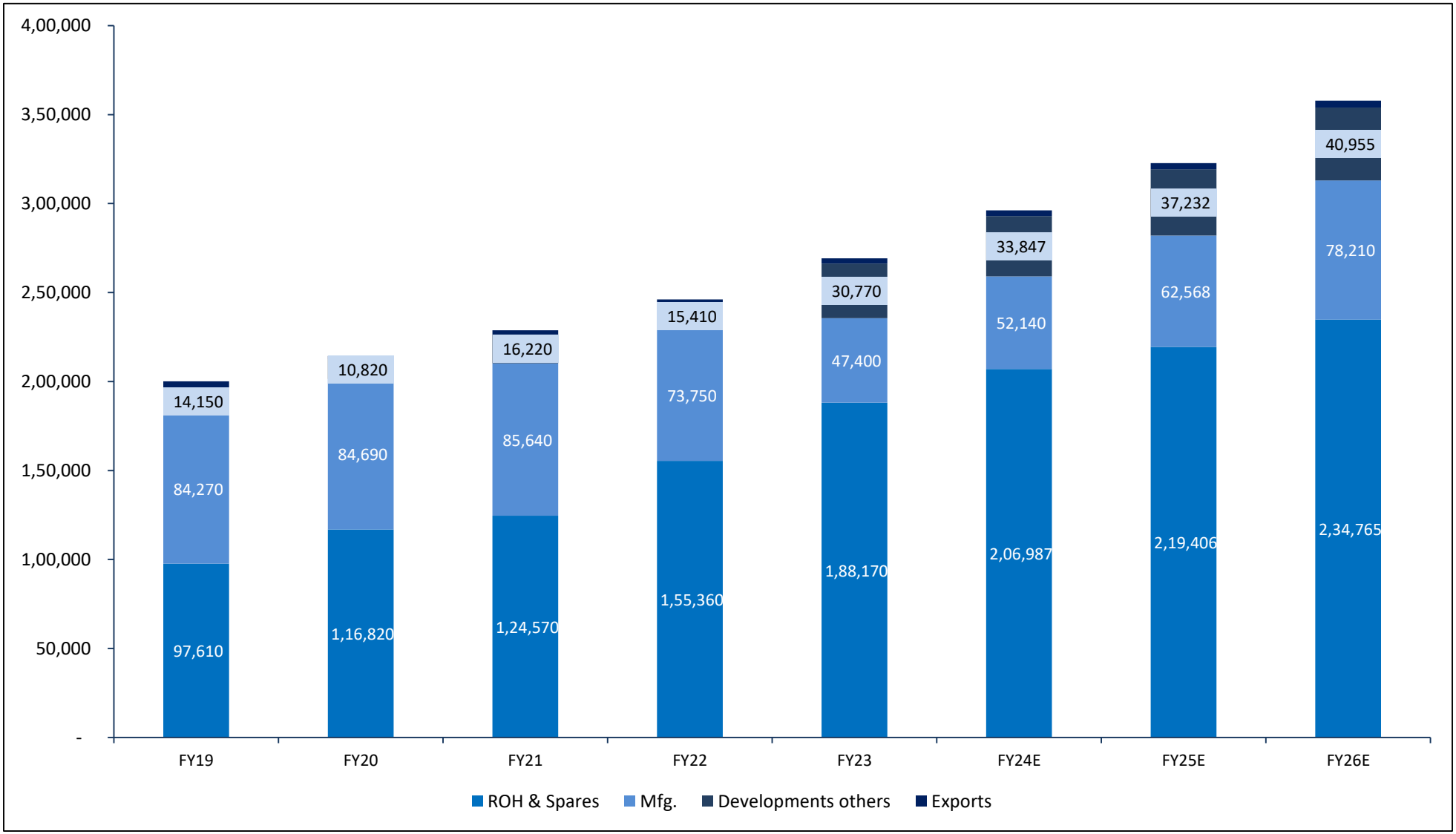
- Aircraft maintenance, repair, and overhaul (MRO) is determined primarily by the total flying hours and the G-forces experienced during flight. Fighter aircraft endure G-forces ranging from +9g to -3g. Once an aircraft completes its designated flying hours, usually between 800 to 1000 hours, the airframe needs to undergo an overhaul.
- After this process, subjecting the airframe to excessive stress is discouraged. MRO services generally involve three main areas: 1) Airframe maintenance, 2) Engine maintenance, and 3) Component maintenance.

MRO % of value by activities



Source: Company, CEBPL

We expect MRO segment to grow at 7-8% over 2023-27 and over 1.5X post FY27 led by increased capacity and ageing of inducted craft between 2010-2015.(Inr mn)

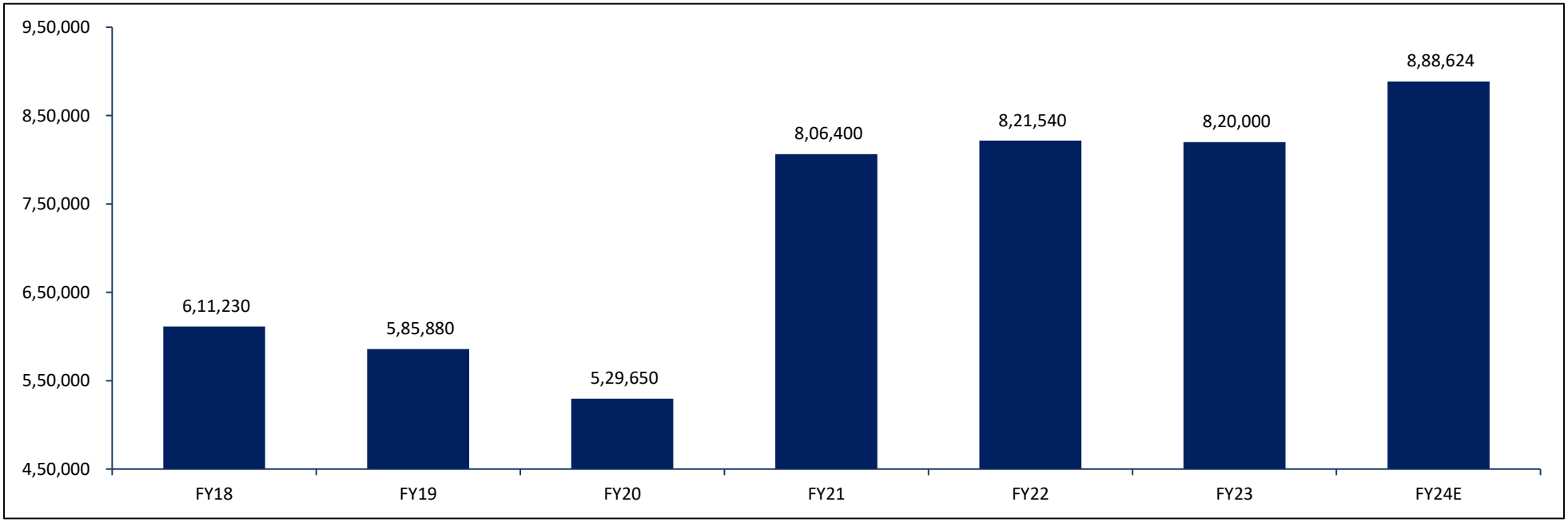


Source: Company, CEBPL

Healthy order book with strong order inflow visibility

- HAL carries a strong order book which is around 3X of FY23 revenue. The majority of the order book consists of MRO shares (71% share). HAL's MRO division provides Maintenance, repair, and overhaul to various indigenously, under license, and imported aircraft. In the manufacturing division, some of the key orders include HTT-40, DO228, PSLV, ALH, LCH, and LCA MK-1A. India is looking to add more fighter aircraft into Airforce and Navy over the next 6-7 years by way of the addition of LCA, SUK-30 MKI, DO228, LCH, UHM, ALH, and a newly signed deal of 414-FP engine (via ToT route) for AMCA and upcoming LCA-MK-II. As a pioneer in aircraft technology, we expect HAL to be a prime beneficiary for the increasing requirement of Aircraft, helicopters, and other defense products like UAVs & engines etc. As per the MoD target, India would be adding 11 squadrons crafts over the next 8-10 years (exhibited below table) which provide healthy revenue visibility to HAL.
- India has currently 31 squadrons in its fleet and planning to reach 42 squadrons. This is the long-term plan. Indian Air Force will have 35-36 combat squadrons by the mid-2030s say the IAF chief. Each squadron will have an 18-20 aircraft shortfall of 190-220 aircraft. The research found that only 50-60% of aircraft are in war-ready mode and the remaining fighter are going to maintenance or overhaul. Reduction in availability is impacting the aerial footprint.
- By 2024, the IAF has plans to phase out three squadrons of MiG-21 Bison. This will be followed by the phasing out of six squadrons of the ageging Jaguar fighter fleet starting in 2025 and continuing till 2032. By late next decade, three squadrons each of the upgraded Mirage 2000 and MiG-29 fleets would be scheduled to be phased out.

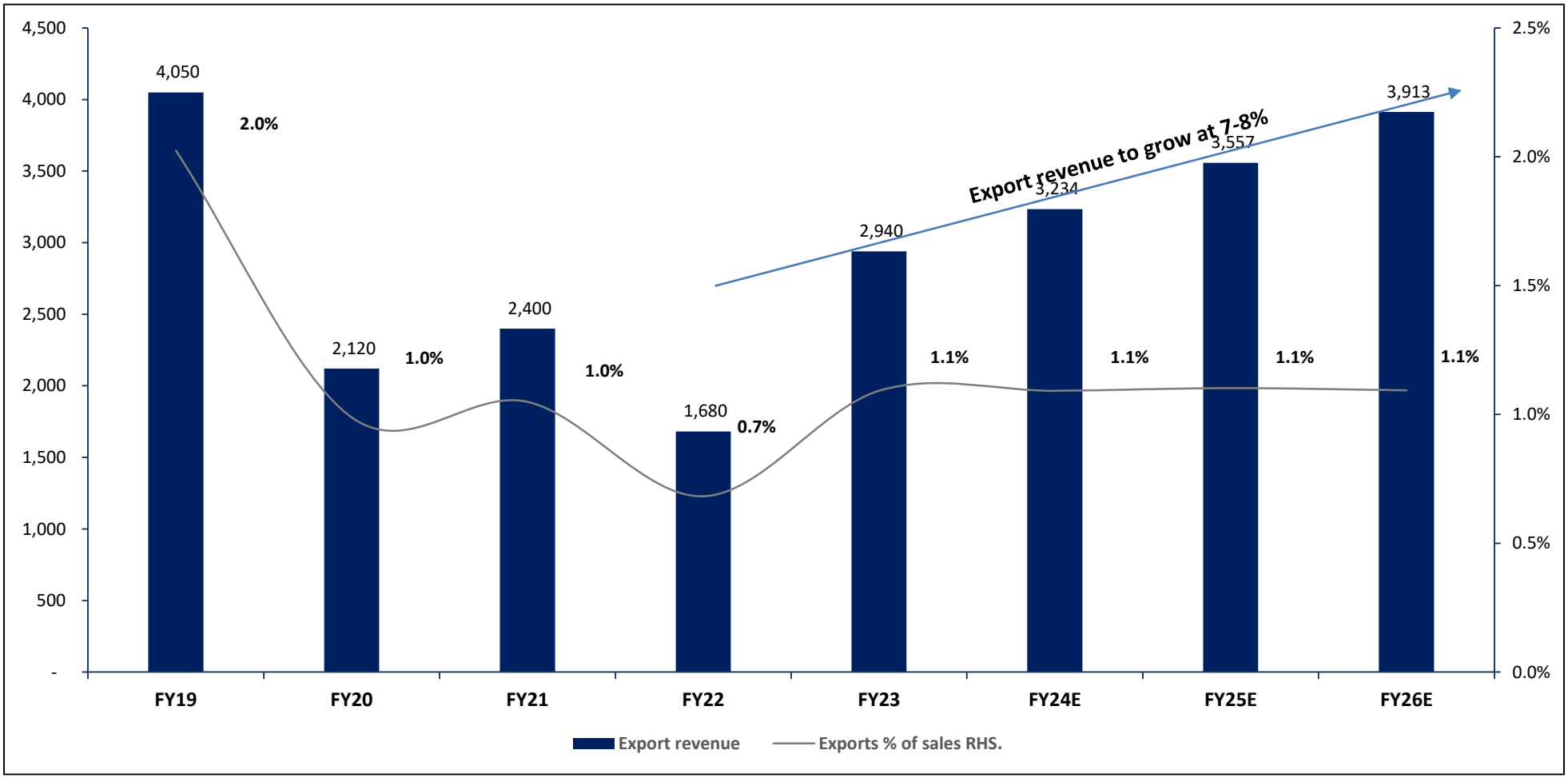
Order Book Trend in Mn. INR



Source: Company, CEBPL

And Focus on Exports to further diversify the revenue mix

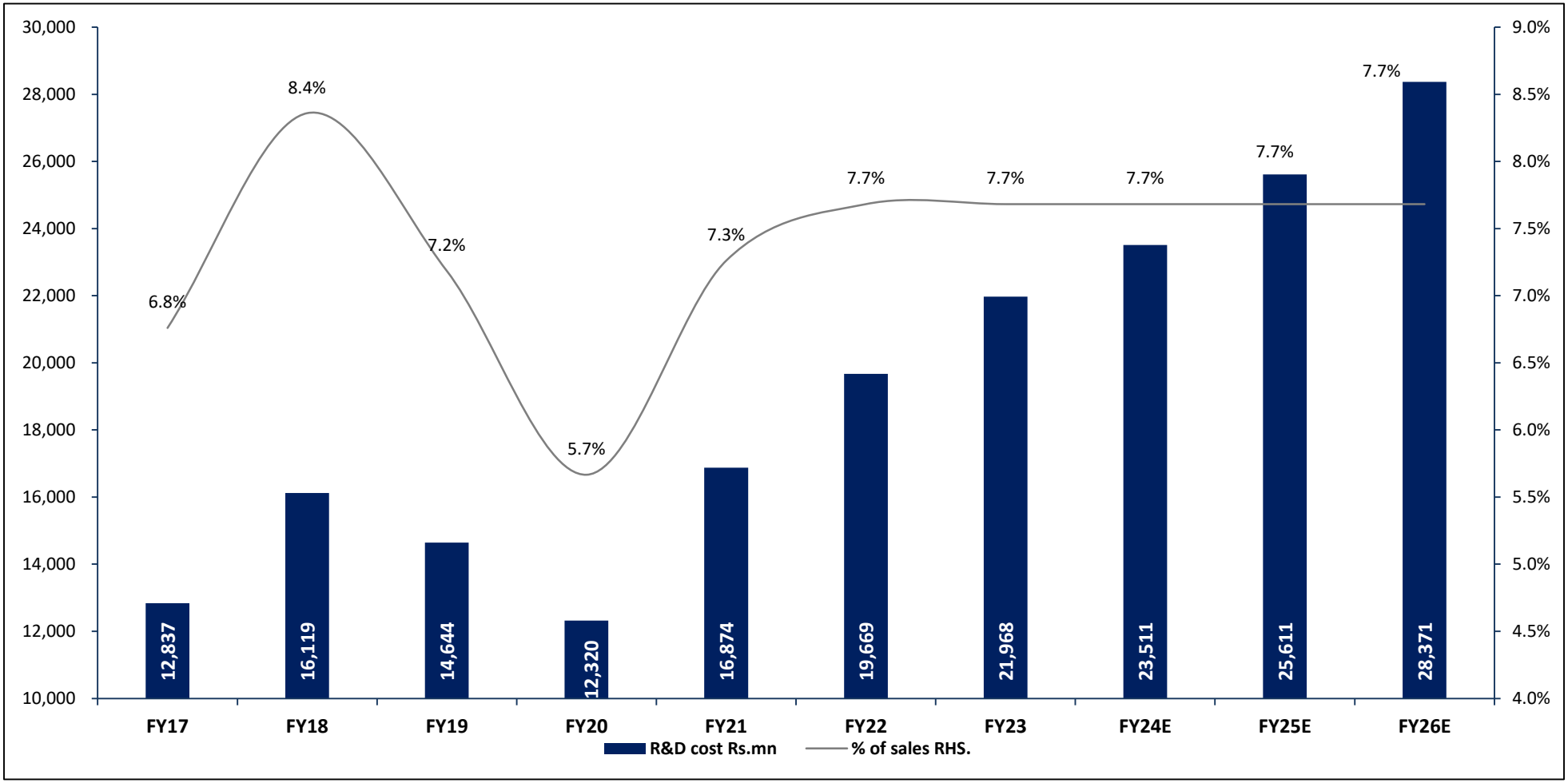
- HAL has a good reputation in the global aerospace industry. They have made several initiatives for the export of military products and have supplied Dhruv helicopters to Ecuador, Mauritius, Maldives, and Nepal. In addition, they have also supplied the Cheetah and Chetak helicopters to Namibia, Nepal, Mauritius, and Suriname, the Cheetal helicopter to Afghanistan, the Lancer helicopter to Nepal, and the Dornier 228 aircraft to Mauritius and Seychelles.
- In addition, They have exported aero-structures to customers in the United States and Europe including aircraft doors to commercial aircraft manufacturers. Further, they undertake a supply of spares and services on a regular basis.
- Recently India & Argentina have signed a Letter Of Intent (LOI) for 20 LCH Prachand helicopters. Approximately Rs. 50-60 Billion opportunity.



Source: Company, CEBPL

Strong R&D development capability

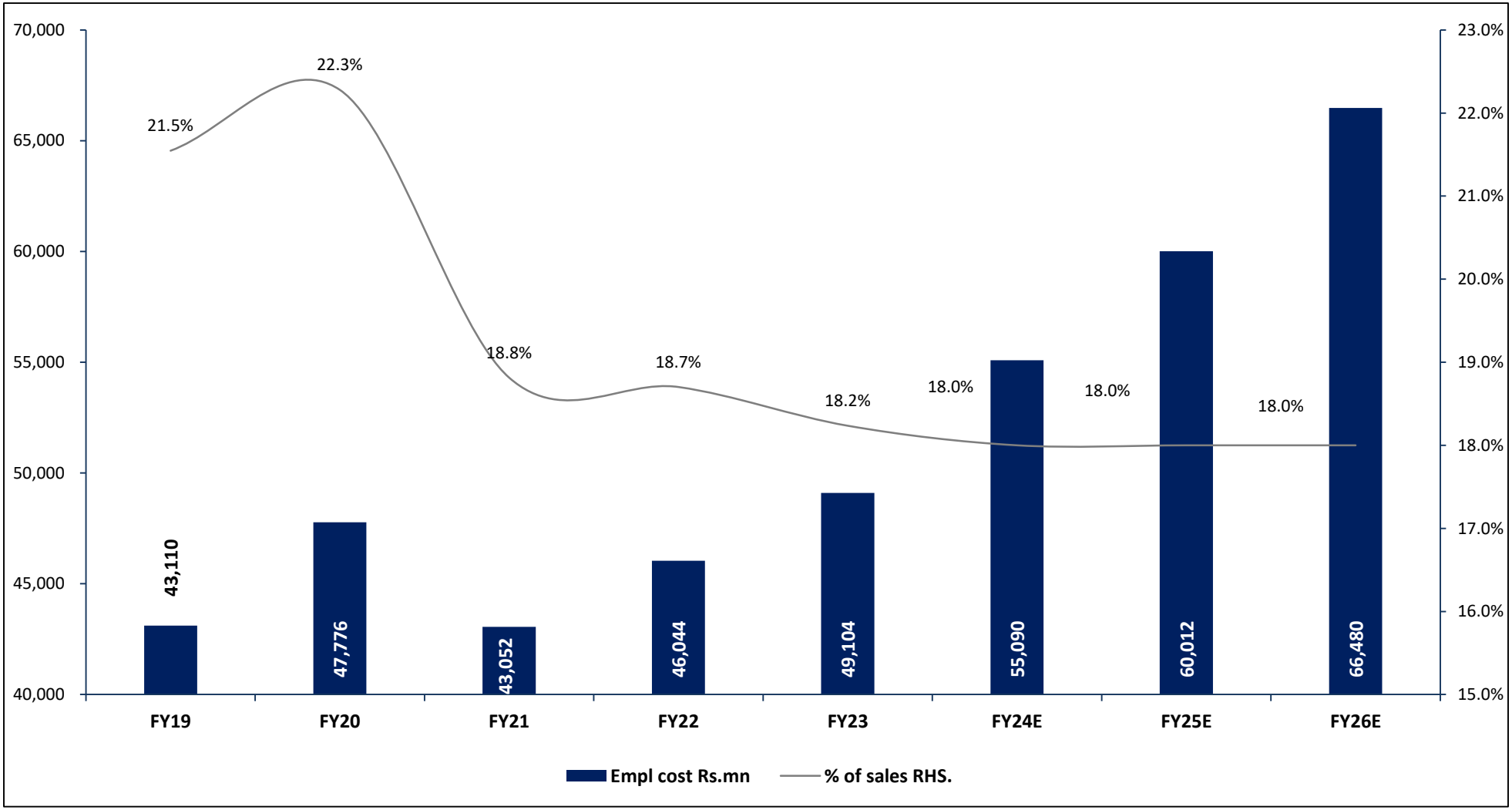
- HAL has 20 production divisions and 10 R&D Centres co-located with the production divisions. HAL's R&D centres are capable of developing a wide range of products, upgrading products with combat operational capability and operational performance and maintaining a pipeline of products to meet its future needs. Its design capabilities provide it with a significant competitive advantage in the Indian aeronautical industry.
- HAL have policy of keeping the R&D reserve at 10% of PAT. Company's conduct research and development activities under customer funded contracts as well as internal reserve. Over the last few years' company has spent in the range of 7-9% in last 5 years. As India is moving towards more localised manufacturing and joint development we expect R&D expenses to remain high over next 5-6 years.



Source: Company, CEBPL

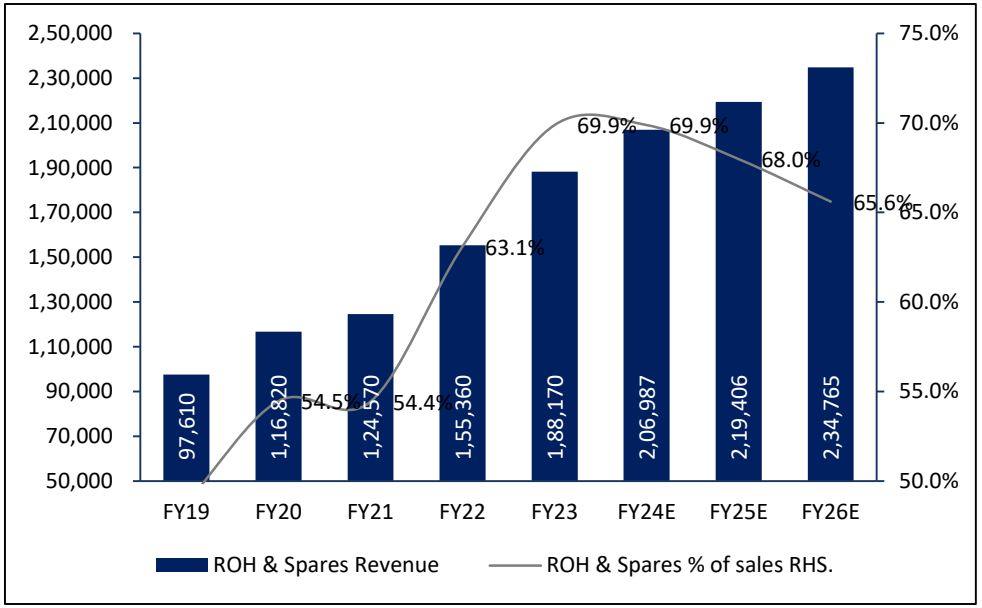
Reduction in staff cost to drive margins

- HAL generates roughly 70% of its revenue from the MRO division. HAL's largest fixed cost is staff cost which accounts for ~18%, down from ~22% in FY19. In order to be competitive in the industry HAL has taken various steps to reduce the fixed cost like pay revision in 2017 and VRS scheme in 2020.
- Management working to control the fixed cost by reducing surplus manpower and high labor cost and also working to outsource some of the operations to private players. We expect going forward employee cost to remain under control and may reduce further.



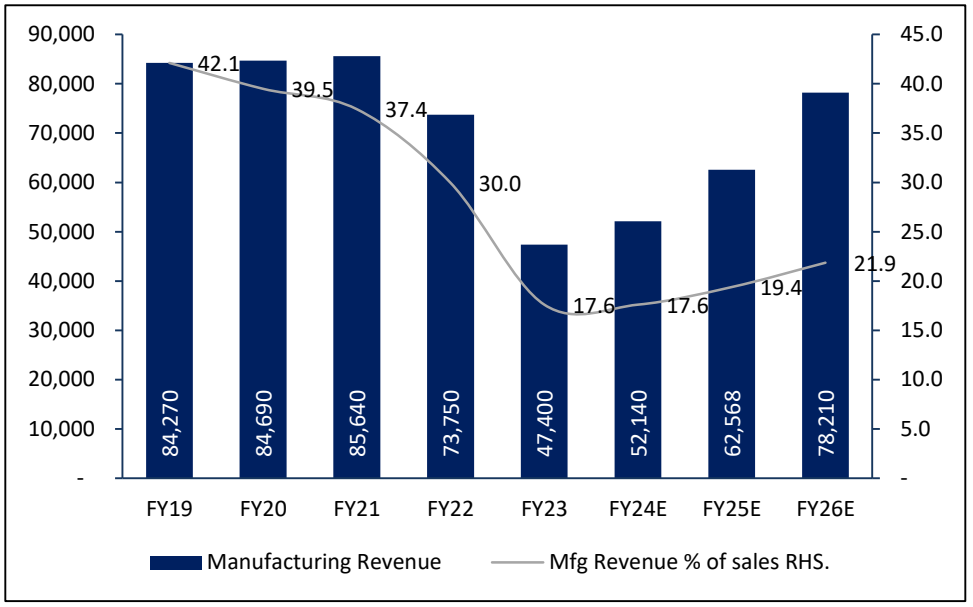
Source: Company, CEBPL

ROH & Spares as a % of Sales



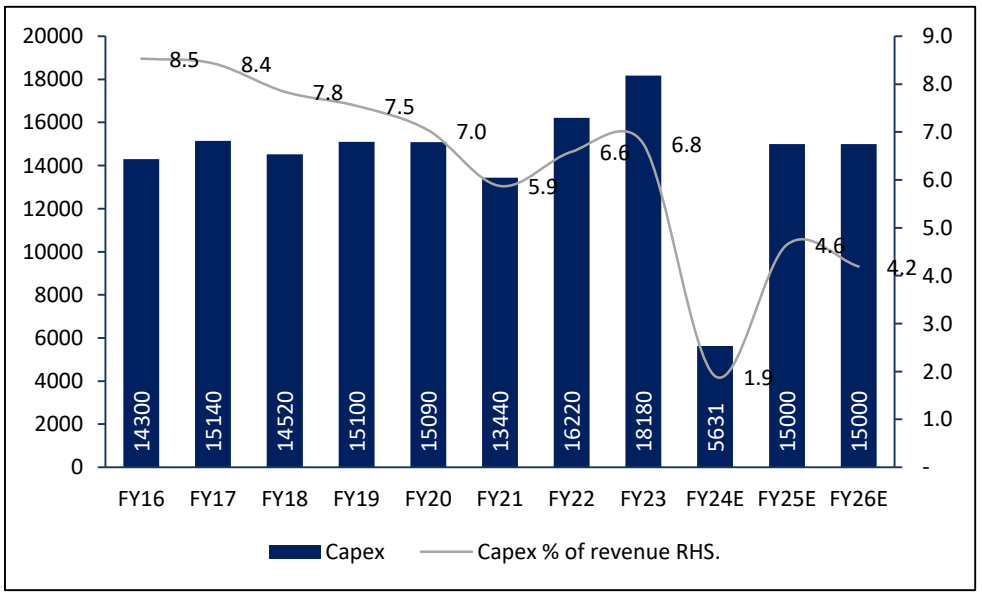
Source: Company, CEBPL

Mfg revenue as a % of sales in INR mn.



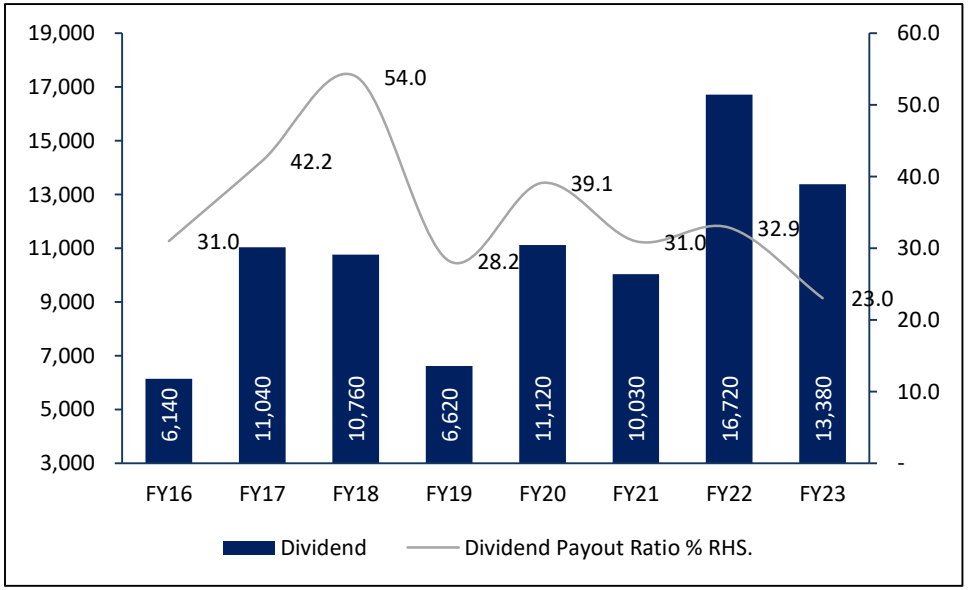
Source: Company, CEBPL

Capex Trend % of sales



Source: Company, CEBPL

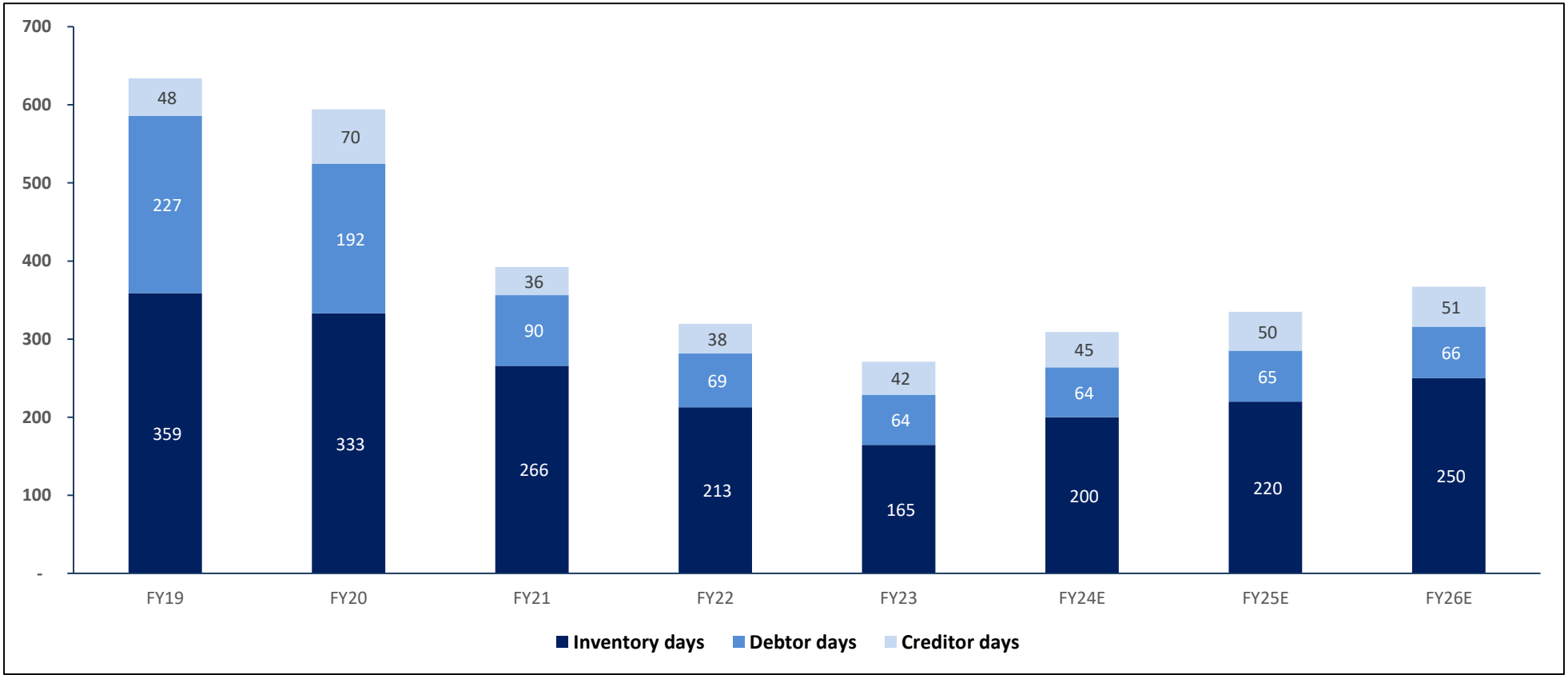
Dividend Trend



Source: Company, CEBPL

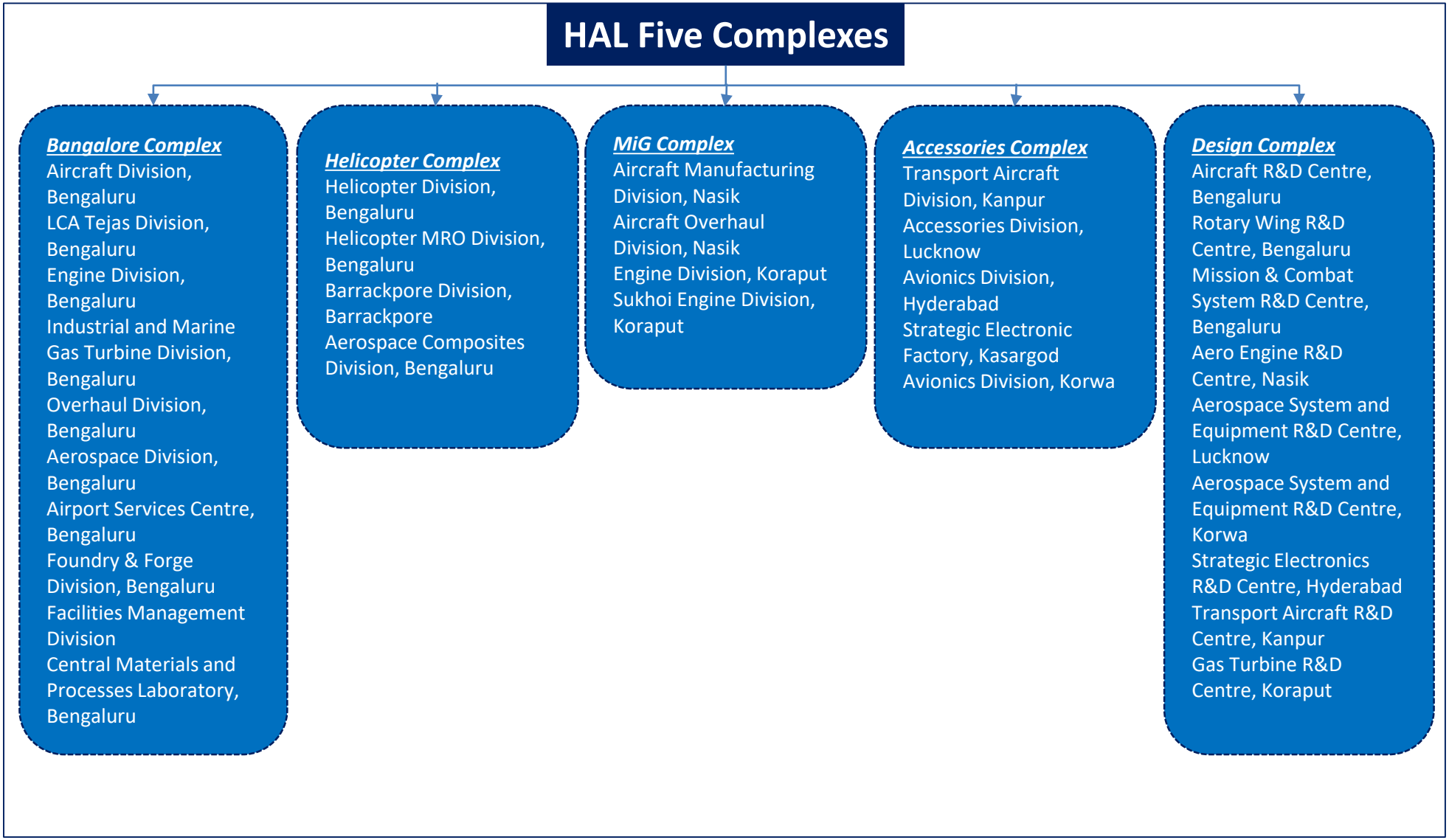
Improving working capital cycle

- HAL's order book consists of large ticket sizes as well where delivery time is over 18-24 months. HAL receives advance for manufacturing of those contracts which helps HAL to manage its working capital efficiently. For large ticket developments contract revenue get recognized based on milestone achieved.
- WC has improved significantly from 586 days in FY19 to 186 days in FY23. We expect this will remain in the range of 190-220 going forward as in most of the development contracts HAL is getting advance from customers.



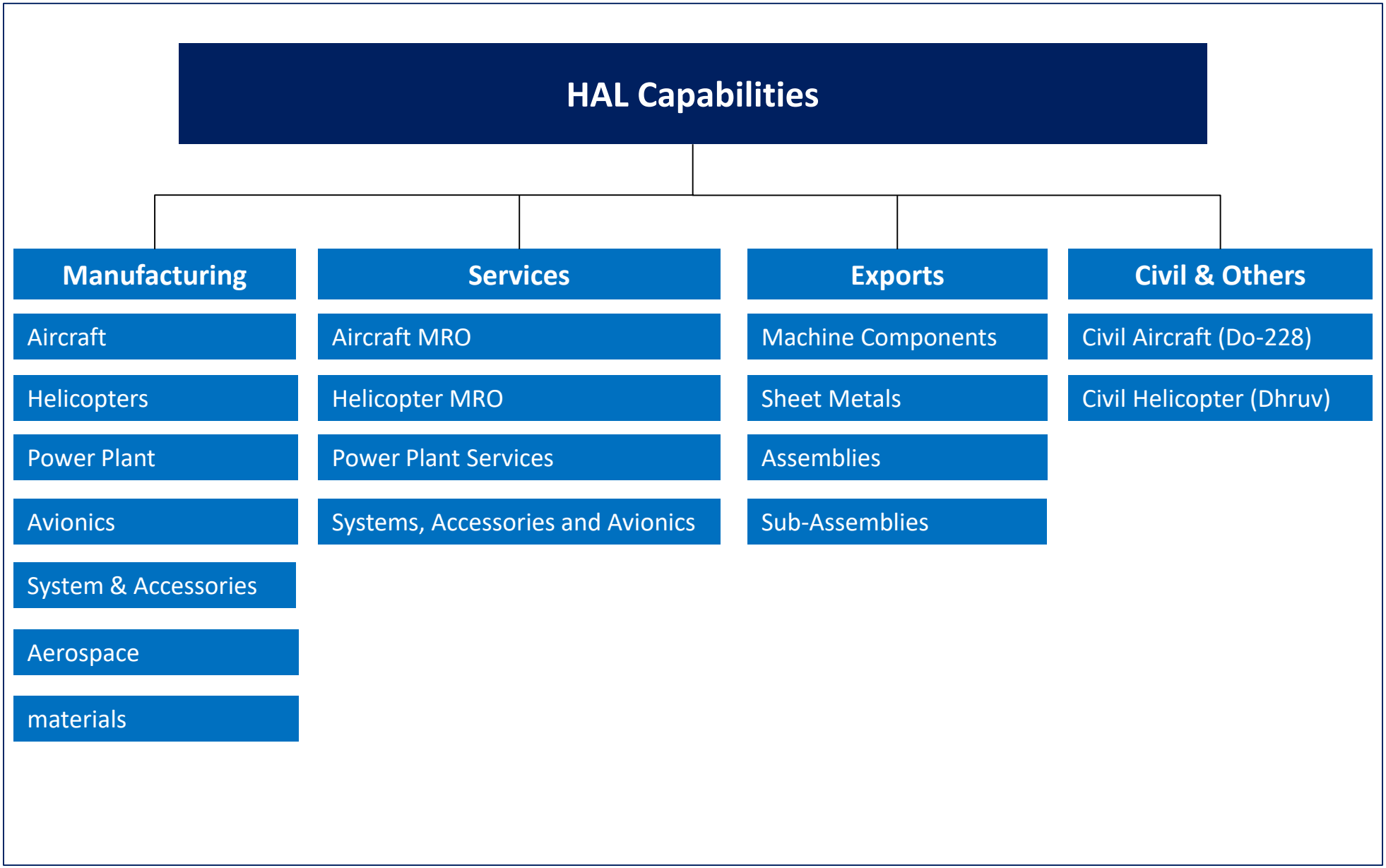
Source: Company, CEBPL

Operations are organized into five complexes- 20 production divisions 11 research and design centres ("R&D Centres") located across India



Source: Company, CEBPL

Company Structure



Source: Company, CEBPL

Key Management Personals

Name and Designation	Brief description
Shri C.B. Ananthakrishnan Director (Finance) & CFO, Chairman and Managing Director (Addl Charge)	Shri C B Ananthakrishnan, a Commerce Graduate and Post Graduate in Business Administration from Madras University, He has also received management and leadership training from IIM, Ahmedabad and IAS Toulouse, France .He was appointed as Director & CFO of the company on August 1, 2018. With over 35 years of experience in public and private sectors, he developed financial strategies and policies for pricing, cost control, and profit planning. He secured one of the largest helicopter contracts valuing over Rs. 14000 Crore also he was instrumental for Conclusion of prices for Repair & Overhaul and Supply of Spares by 3rd Pricing Policy Review Committee, Conclusion of 73 ALH Contracts for Army and IN & ICG played a pivotal role in the Initial Public Offering and listing of shares in March 2018. Shri Ananthakrishnan has been entrusted with additional charge of CMD since August 1, 2022.
Shri Jayadeva E. P Director (Operations)	Shri Jayadeva E.P. is a 33-year-old Electrical Engineering graduate from University Visvesvaraya College of Engineering, Bangalore, and holds a Masters from IIT Madras in Aircraft Production Engineering. He joined Hindustan Aeronautics Limited in 1987 and has experience in manufacturing, assembly, overhaul, upgrades, customer support, and indigenisation. He has managed new fighter aircraft manufacturing, overhaul, and upgrades, and has been instrumental in corporate planning. Prior to joining HAL, he held the position of General Manager at LCA Tejas Division in Bangalore. During his tenure, the division experienced sustained growth, with production reaching 8 aircraft during 2021-22. He also led the strategic outsourcing of structural assemblies from Indian Industries and undertook product quality enhancement initiatives for Light Combat Aircraft. He was entrusted with additional charge as Director (HR) of the company from December 1, 2022, to May 31, 2023.
Shri. Dr. D. K. Sunil Director (Engg and R&D)	Shri. Dr. D. K. Sunil, a 33-year-old Electronics & Communication Engineering graduate from Osmania University, Hyderabad, holds a Ph.D in Electronics Science from the University of Hyderabad. He joined Hindustan Aeronautics Limited (HAL) in 1987 and has worked in various key positions. He has a history of certification, including the first Airborne Radio for the Light Combat Aircraft and the first Secure Radio for the MiG-21 Upgrade program. Sunil also designed and produced the ACS 235 secure radio, which is now the mainstay of the Army's ALH fleet. He was Programme Manager for Fifth Generation Fighter Aircraft, where new technologies like High Power Radar Power supply, Voice Activated Control System, and Combined Interrogator Transponder were developed. Sunil has led teams at Mission Combat Systems R&D Centre in Bengaluru, where he led teams on Active ESA Radar, Automatic Flight Control System for LCH, and Mission Computers for helicopter and fighter platforms. He has published seven papers in peer-reviewed journals and holds nine copyrights related to wireless communication.

Source: Company, CEBPL

Key Management Personnels Cntd..

Shri Sajal Prakash **CEO, AC**	Shri Sajal Prakash has been appointed as the Chief Executive Officer of Hindustan Aeronautics Limited (HAL) at Lucknow on September 1, 2019. With a B. Tech in Mechanical Engineering from HBTI, a PG degree in Aircraft Production Engineering from IIT, Chennai, and a Leadership Development Program from IIM, Prakash has administrative control over various divisions and offices of HAL. He has extensive experience in various fields, including Project Management, Marketing, Business Development, Civil Aircraft, and Helicopters. Under his leadership, HAL's Transport Aircraft Division has overcome numerous challenges and consistently met financial and physical targets. Prakash has taken several e-initiatives, bringing systemic changes, transparency, and process improvement. He is a team player, passionate reader, and has been a member of professional bodies like Aeronautical Society of India (AeSI) and the Kanpur Branch (UP & Bihar Chapter) (AeSI) from July 2017 to August 2019.
Mr S Anbuvelan **CEO, HC**	Shri S Anbuvelan has been appointed as Chief Executive Officer of Helicopter Complex, effective October 01st, 2020. With a background in Mechanical Engineering and Aircraft Production Engineering, Anbuvelan has served in various roles at Hindustan Aeronautics Limited (HAL) for 34 years. His achievements include producing ALH's Integrated Transmission Assembly, ramping up production of gear boxes, reducing snags during equipping, training employees, outsourcing management, and streamlining ALH production. Anbuvelan's expertise in end-to-end process optimization, manufacturing, quality, and supply chain management will help Helicopter Complex achieve renewed growth in the Indian Defense and Civil Helicopter market.
Shri Mihir Kanti Mishra **CEO, Banglore Complex**	Shri Mihir Kanti Mishra has been appointed as the Chief Executive Officer (CEO) of Hindustan Aeronautics Limited (HAL)'s Bangalore Complex since July 1, 2022. With 35+ years of experience in various business verticals, including engine, aircraft, space, and corporate functions, Mishra has been instrumental in driving HAL's growth and establishing new facilities for Cryo engine manufacturing. He has also played a key role in exporting build-to-print work-packages of engine components and driving export business growth. Mishra's expertise spans manufacturing, assembly, engineering, strategy planning, project management, and international marketing.
Shri Saket Chaturvedi, **CEO , MiG Complex**	Shri Saket Chaturvedi is an Electronics Engineering graduate, M.Tech. in Digital Communication, MBA in Marketing, and Project Management IPMA Level-C Certified Professional. He joined HAL in 2004 and has served in various departments, including Plant Maintenance, Outsourcing, MiG ROH, Business Development, and Projects. Chaturvedi took over as General Manager of the Aircraft Overhaul Division in 2020, reducing the ROH cycle time of Su-30MKI aircraft by 15 months. He also developed indigenous repair technologies for 40 types of non-repairable LRUs, enhancing operational preparedness and achieving Atma Nirbharta in Su-30 ROH. Chaturvedi consistently produced 20 aircraft annually, earning the Best Performing Division award for the year 2020-21 and 2021-22.
Shri Shailesh Bansal **Company Secretary & Compliance Officer**	Shri Shailesh Bansal, 47, is a 47-year-old Indian company secretary and compliance officer with over 22 years of experience in managing corporate affairs in both public and private sectors. He has managed IPOs, OFS, joint ventures, and corporate laws in various countries. Bansal has held various positions in Hindustan Aeronautics Limited since 2014 and was appointed as Compliance Officer in November 2022. He is not related to any company directors and does not hold any shares.

Source: Company, CEBPL

Key Milestones

Year	Description
1940	Hindustan Aircraft Factory" promoted by Late Walchand Hirachand for manufacture of American Aircraft under Licence was established.
1941	First Flight of Harlow Aircraft in 1941.In March the Indian Govt. became part owners
1942	Factory was taken over by the Government. The U.S Army Air Force faced with colossal aircraft repair and overhaul requirements took over the Management of HAL from Govt. for the duration of the World War - II.
1946	Aircraft Structural Assembly line during 1946.HAL receives the order from Air Force for repair and overhaul of 100 Tiger Moth Aircraft
1948	First Indian built Percival Prentice Trainer was test flown in April
1951	HAL was brought under Administrative Control of Ministry of Defence.
1955	Manufacture of engines was entrusted to HAL. Vampire Aircraft Assembly Line in 1955
1956	Establishment of Engine Division at Bangalore.Manufacture of Gnat aircraft under licence from M/s. Folland Ltd., U.K.
1961	First flight of Marut (HF-24) built at Bangalore in June. First flight of HS-748 aircraft built at Kanpur in November.
1962	Signing of Chetak licence agreement between HAL and M/s. Sud Aviation (now Eurocopter) in June.Signing of an agreement between India & USSR for manufacture of MiG-21 FL aircraft, including its engines and avionics in August.
1963	First flight of Kanpur manufactured Glider in May.
1964	The first Orpheus 703 Engine manufactured from raw materials was test accepted
1966	Signing of an agreement between India & USSR for overhaul of MiG engines in August.
1970	Signing of Cheetah (SA-315) licence agreement between HAL and M/s. SNIAS in September.
1973	Completion of 1st MiG 21M aircraft of CTS series in February
1976	Signing of an agreement with USSR for manufacturing of MiG-21 BIS aircraft & R-25-300 series engines and its avionics in August.Initial flight of Ajeet aircraft in September

Source: Company, CEBPL

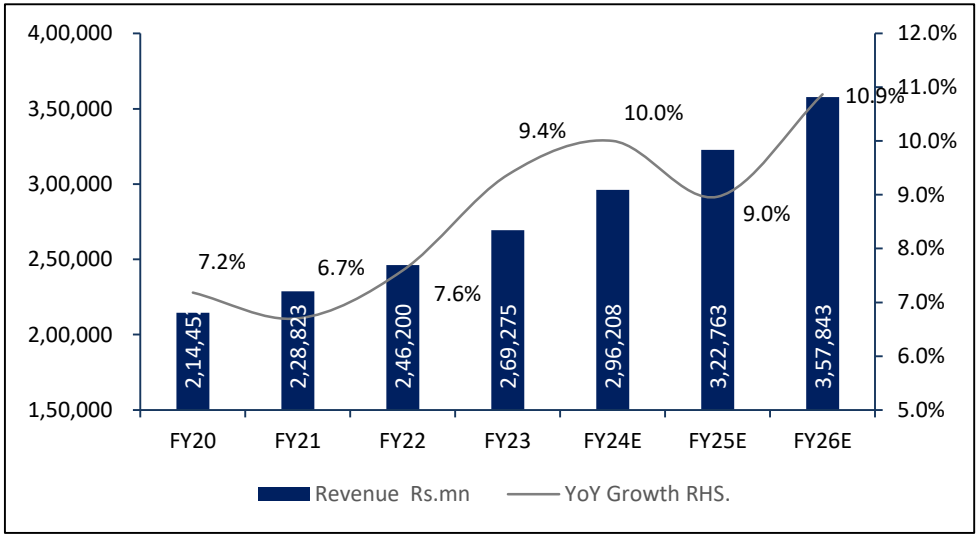
Key Milestones Cond..

Year	Completion of 1st MiG-27M aircraft CTS series in September.
1986	Handing over of 1st Dornier aircraft by Shri Sukhram, Minister of State for Defence Production to Shri Jagdish Tytler, Minister of State for Civil Aviation
1989	The 1st Liquid Propulsion Engine (fitted to Prithvi Missile) was successfully test fired in December.
1990	Signing of Inter Governmental agreement for overhaul of RD-33 engines in May. Export of DO-228 Aircraft Coast Guard Version to Mauritius in June.
1993	Handing over of 3000th Aircraft to Air Chief Marshal. Formation of BAe-HAL Software Joint Venture at Bangalore. Contract for manufacture of 100 sets of Fokker-50 Horizontal Stabilizer signed with M/s. Fokker BV, Netherland in February
2003	Contracts for co-development & co-production of Shakti Engine and direct purchase of TM-333-2B2 engines inclusive of overhaul with M/s Turbomeca (TM) was signed on 13th January (for use on ALH).
2004	First flight on MiG - 27M upgraded aircraft successfully completed on 25th March.
2005	First Su-30MKI aircraft built under licence from Russia was delivered to IAF on 21 Mar 05.
2006	HAL Rolls- Royce celebrated 50 yrs of partnership.
2009	HAL and Boeing signed an agreement for production of flaperons for Boeing's 777. HAL handed over 5 ALHs to Ecuadorian Air Force. One ALH was given to Mauritius
2010	LCA gets Initial Operational Clearance (IOC). HAL-Rolls Royce established a JV for manufacturing of Compressor Shroud rings
2012	The General Contract for Multirole Transport Aircraft (MTA) Project signed between HAL and MTAL, UAC-TA, Russia in Bengaluru on 28th May 2012
2013	The Defence Minister, Mr. A. K. Antony handed over HAL's DO-228 Aircraft to the Minister of Foreign Affairs of Seychelles, Mr. Jean-Paul Adam, at a function in New Delhi on January 31, 2013
2019	HAL took a lead role in organizing the entire Aero India -2019 held at Air Force Station, Yelahanka, Bengaluru from February 20 to 24, 2019.
2020	The LCA Navy prototype-2 successfully demonstrated arrested landing on ship INS Vikramaditya on January 11, 2020.
2022	LCA Mk1A took its maiden flight on May 20, 2022. HAL and Safran Helicopter Engines signed an agreement to create a new joint venture intended to develop helicopter engines at Corporate Office on July 8, 2022.

Source: Company, CEBPL

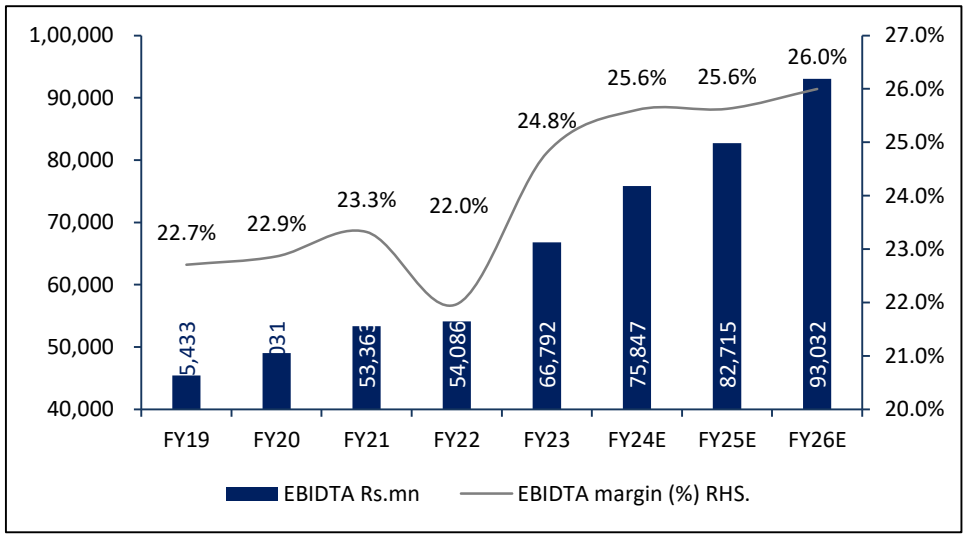
Story in charts

Revenue to increase led by new facility and new product line addition



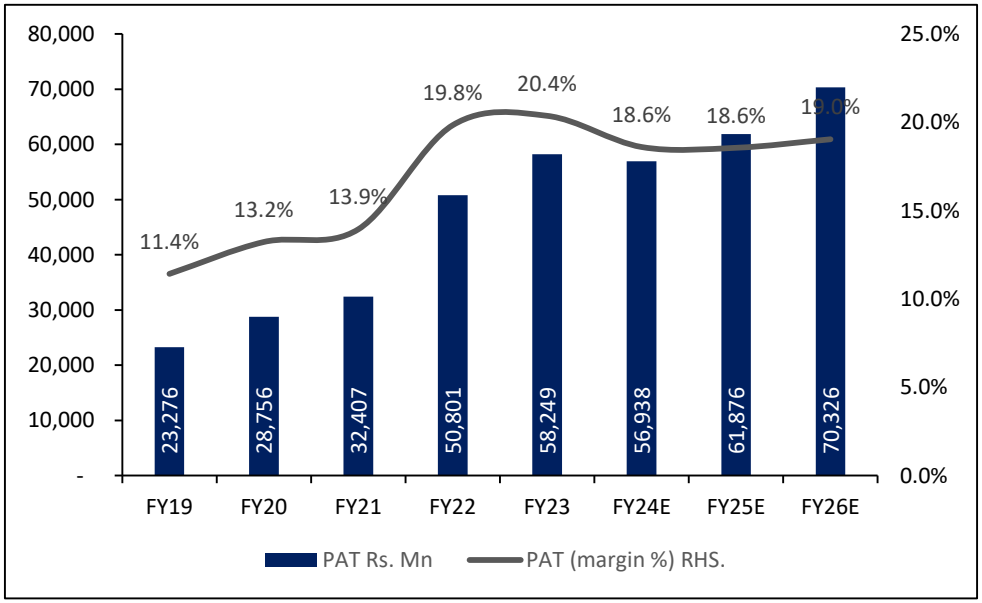
Source: Company, CEBPL

EBITDA Margin to expand led by cost reduction and staff cost moderation



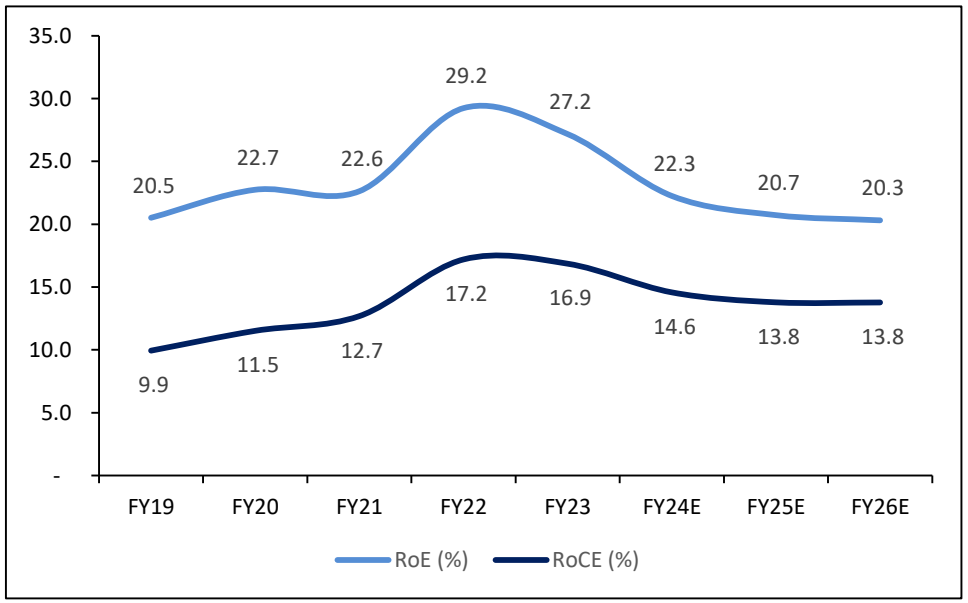
Source: Company, CEBPL

PAT (Rs. Mn.) and YoY (%) growth



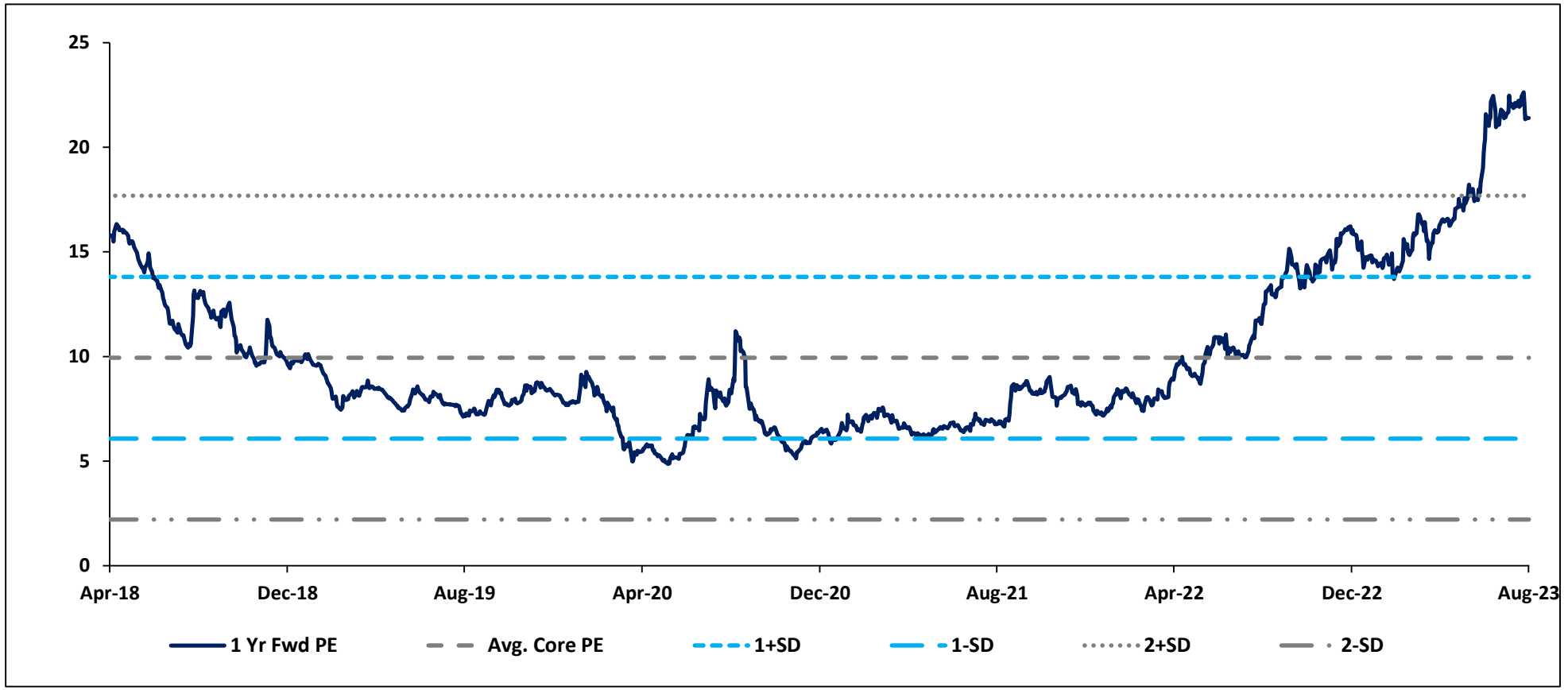
Source: Company, CEBPL

RoE and RoCE trend



Source: Company, CEBPL

Hindustan Aeronautics Limited PE Band



Source: Company, CEBPL

Hindustan Aeronautics Ltd INR mn	FY22	FY23	FY24E	FY25E	FY26E
Income Statement					
Revenue	2,46,200	2,69,275	2,96,208	3,22,763	3,57,843
Gross profit	1,46,188	1,68,254	1,67,664	1,82,402	2,02,724
EBITDA	54,086	66,792	75,847	82,715	93,032
Depreciation	11,105	17,847	12,198	13,424	13,679
EBIT	42,980	48,945	63,648	69,291	79,354
Interest expense	582	580	500	600	680
Other Income	9,849	16,701	9,849	10,637	11,488
EO Items	-	-	-	-	-
PAT	**50,802**	**58,249**	**56,938**	**61,876**	**70,326**
Adjusted PAT	50,800	58,277	56,938	61,876	70,326
EPS	151.9	174.3	170.3	185.0	210.3
NOPAT	41,790	43,816	49,646	54,047	61,896
Balance Sheet					
Net worth	1,93,169	2,35,759	2,75,978	3,21,134	3,71,397
Minority Interest	0	0	0	0	0
Deferred tax	0	0	0	0	0
Total debt	0	0	0	0	0
Other liabilities & provisions	1,40,526	1,28,006	1,46,794	1,60,623	1,75,785
Total Net Worth & liabilities	**3,33,694**	**3,63,765**	**4,22,771**	**4,81,757**	**5,47,182**
Net Fixed Assets	59,276	57,986	50,788	52,363	53,685
Capital Work in progress	9,491	6,369	7,000	7,400	7,800
Investments	21,777	28,345	29,621	32,276	42,941
Cash & bank balance	1,43,477	2,03,166	2,55,582	3,17,624	3,43,959
Loans & Advances & other assets	43,602	60,646	60,509	65,923	76,629
Net Current Assets	1,99,549	2,10,419	2,74,854	3,23,794	3,66,128
Total Assets	**3,33,694**	**3,63,765**	**4,22,771**	**4,81,757**	**5,47,182**
Capital Employed	1,93,169	2,35,759	2,75,978	3,21,134	3,71,397
Invested Capital	49,692	32,593	20,396	3,510	27,438
Net Debt	(1,43,477)	(2,03,166)	(2,55,582)	(3,17,624)	(3,43,959)
FCFF	91,780	73,099	58,189	80,408	61,626
Cash Flows					
Cash flows from Operations	99,801	80,973	63,820	95,808	77,026
Capex	(8,021)	(7,874)	(5,631)	(15,400)	(15,400)
FCF	91,780	73,099	58,189	80,408	61,626
Cash flows from Investing	(1,27,917)	(57,367)	(6,907)	(18,056)	(26,065)
Cash flows from Financing	(14,637)	(17,313)	(17,219)	(17,319)	(20,743)

Source: Company, CEBPL

Hindustan Aeronautics Ltd	FY22	FY23	FY24E	FY25E	FY26E
Growth Ratios					
Revenue (%)	7.6	9.4	10.0	9.0	10.9
EBITDA (%)	1.4	23.5	13.6	9.1	12.5
PAT (%)	56.5	14.7	(2.3)	8.7	13.7
Margin ratios					
EBITDA margins (%)	22.0	24.8	25.6	25.6	26.0
PAT Margins (%)	20.6	21.6	19.2	19.2	19.7
Performance ratios					
OCF/EBITDA	1.8	1.2	0.8	1.2	0.8
OCF/IC	200.8	248.4	312.9	2,729.2	280.7
RoE (%)	26.3	24.7	20.6	19.3	18.9
ROCE (%)	22.3	20.8	23.1	21.6	21.4
Turnover Ratio (Days)					
Inventory	213	165	200	220	250
Debtors	69	64	64	65	66
Payables	38	42	45	50	51
Cash Conversion Cycle	83	10	24	7	23
Financial Stability ratios					
Net debt to Equity (x)	(0.7)	(0.9)	(0.9)	(1.0)	(0.9)
Net debt to EBITDA (x)	(2.7)	(3.0)	(3.4)	(3.8)	(3.7)
Interest Cover(x)	73.8	84.4	127.3	115.5	116.7
Valuation metrics					
Fully diluted shares (mn)	334	334	334	334	334
Price (INR)	3825	3825	3825	3825	3825
Market Cap (INR mn)	12,79,032	12,79,032	12,79,032	12,79,032	12,79,032
PE(x)	25	22	22.5	20.7	18.2
EV (INR mn)	11,35,555	10,75,866	10,23,450	9,61,409	9,35,073
EV/EBITDA (x)	21	16	13	12	10
Book Value (INR/share)	578	705	825	960	1,111
Price to BV (x)	6.6	5.4	4.6	4.0	3.4
EV/OCF (x)	11	13	16	10	12

Source: Company, CEBPL

Choice

Bharat Electronics Limited

Expanding the wing

Defence Initiation

Choice Equity Broking Private Ltd.

Bharat Electronics Limited

Expanding the wing

Defence Initiation

August 2023

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Bharat Electronics Limited

ADD

Expanding the wing

A Navratna PSU Bharat Electronics Limited (BEL) was established in 1954 under the Ministry of Defence, GoI. BEL is a multi-product, multi-technology, multi-unit conglomerate which designs, manufactures, and supplies. It operates in two segments namely Defence and Non-defence segment. On defense it designs, manufactures, and supplies state-of-the-art products and systems in a wide variety of fields including Radars, Missile Systems, Military Communications, Naval Systems, Electronic Warfare & Avionics, C4I Systems, Electro Optics, Tank Electronics & Gun/Weapon System Upgrades, and Electronic Fuzes in the Defence segment and in Non-defence segment includes areas such as Electronic Voting Machines, Homeland Security & Smart Cities, Satellite Integration & Space Electronics, Railways, Artificial Intelligence, Cyber Security, Software as a Service, Energy Storage Products, besides Composite Shelters & Masts.

Investment Thesis

- **Strong order book providing comfort to healthy revenue growth:** FY23 order book stood at Rs. 606bn (3.5x of FY23 sales), of which defence share stood at ~80%. The order books. The order book show ~+5% growth in FY23. Management expects to achieve at least Rs.200bn order in FY24. In Q1FY24 BEL already received an order worth Rs.81bn. This order consists of 2 Regiments of Improved Akash Prime Weapon System (Rs.3914 Crore) and Other Significant Orders valued at Rs.1984 Crore. Another order worth Rs.2191 crores received new Defence and non-Defence orders. Management has not counted a few large ticket orders Like QRSAM, MRSAM which is under the pipeline and may award in the near to medium term.
- **Expansion in new product facilities and new products to support double-digit growth over the next 2-3 years.** In line with GoI's effort to modernize and localize the military equipment BEL is continuously upgrading its existing facility or setting up a new facility. Recently the company has set up a new facility for an Advanced electro-optics factory at Nimmaluru in Andhra is in an advanced stage, EW factory at Ibrahimpatnam. At Palasamudram for defense system integration complex, for the explosive and fuse complex at Nagpur is expected to complete in the next 2-3 years. BEL also working on UAV business with DRDO, sea-based surface vessels, and shipyard and fuse requirements for Army.
- **Export Opportunity:** Last year the company exported US$ 48 mn & 2.4% of revenue, which is significantly lower of pie. Historically the company is not focusing on the export market, exports range between approximately 1%-3% of the total revenue. We are expecting exports will double to US$ 90-100 mn in FY24. The company is aggressively looking for exports. Participating in various programs, and various discussions with customers, anticipating a slight increase in non-defense exports this year because of contribution from EVMs and VVPAT.
- **View and valuation** We like the growth story of BEL due to its position as the sole supplier of various equipment and systems, ongoing innovation in diverse products, a reputable client base consisting of defense PSUs and research centers, and a strong presence in the Indian defense industry. Additionally, the company has a presence in the civilian market (10%) and aims to increase it to 25% in the medium term. The company's healthy order book, which stood at Rs.656bn as of Mar-2023 (~3.7x of FY23 revenue), some of the major order includes Himashakti, Medium Power Radar (Arudhra), Air Defence Control & Reporting System (Akashteer), Lynx U2 systems, EW Suite for MLH Upgrade, DR118 for Su-30, Weapon Locating Radar (WLR), SARANG ESM etc. We initiate coverage on BEL with a TP of Rs.144 (28x Sep-25E). Recommend **ADD**.

CMP (Rs)	**131**
Target Price (Rs)	**144**
Potential Upside (%)	**10.0**

Company Info

BB Code	BHE IN EQUITY
ISIN	**INE263A01024**
Face Value (Rs.)	1.0
52 Week High (Rs.)	133.25
52 Week Low (Rs.)	87
Mkt Cap (Rs bn.)	943.69
Mkt Cap ($ bn.)	11.39
Shares o/s (Mn.)/Free Float (%)	46/49
Adj. TTM EPS (Rs)	4.32
Sep-25E EPS (Rs)	5.1

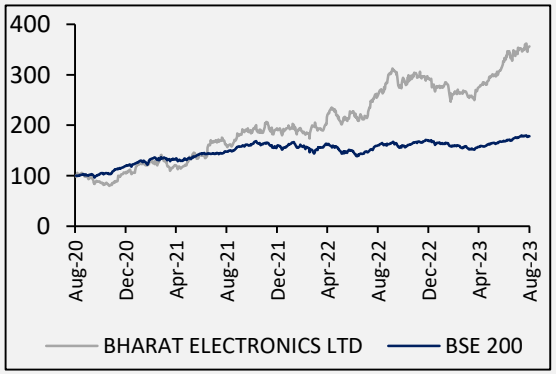
Shareholding Pattern (%)

	Jun-23	Mar-23	Dec-22
Promoters	51.14	51.14	51.14
FII's	17.35	16.42	17.34
DII's	24.84	25.50	25.04
Public	6.68	6.95	6.47

Relative Performance (%)

YTD	1YEAR	2 YEAR	3YEAR
BEL	37	120	256
BSE 200	11	20	78

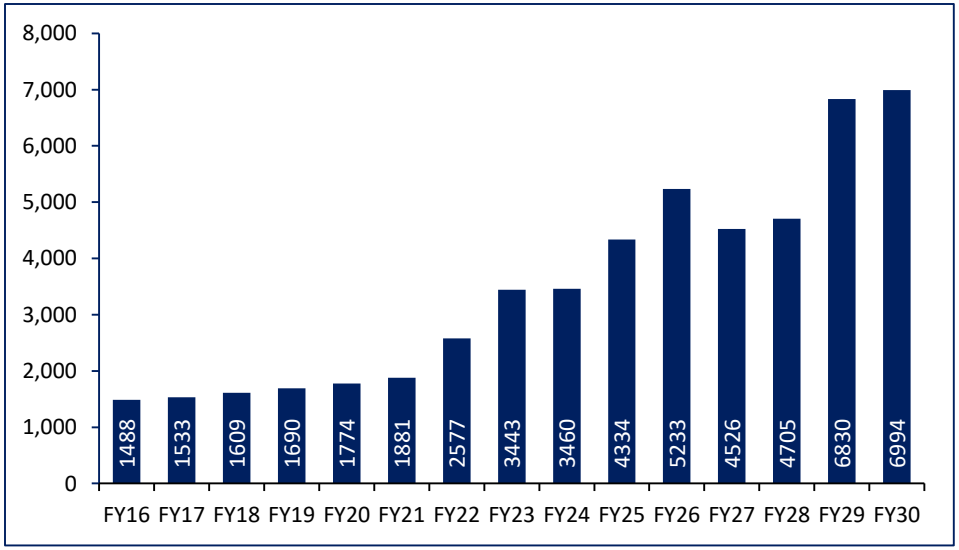
Rebased Price Performance



India Defence Electronics Market

- Currently, Defence Electronics account for only 25-35% of the total cost of platforms used by the Indian armed forces, and this proportion is anticipated to rise in the coming years. Presently, more than 60% of electronic components used are supplied by foreign Original Equipment Manufacturers (OEMs). However, with ongoing efforts towards indigenization, a significant portion of defense electronics procurement is expected to be sourced locally in the future. As a result, platform recapitalization programs across all three armed forces, including the acquisition of new combat aircraft, submarine construction, and T-72 replacement, will play a crucial role in determining the future market valuation of this product segment.
- Between 2016 and 2020, the Defence Electronics market's cumulative value reached around $ 8.09 billion, experiencing a Compound Annual Growth Rate (CAGR) of 4.5% during that period. As of 2021, the market has been evaluated at approximately $ 1.88 billion and is projected to expand to approximately $ 6.99 billion by 2030. The segment offers a cumulative market opportunity of approximately $ 43.98 billion during the forecast period, with an expected CAGR of 15.71%.

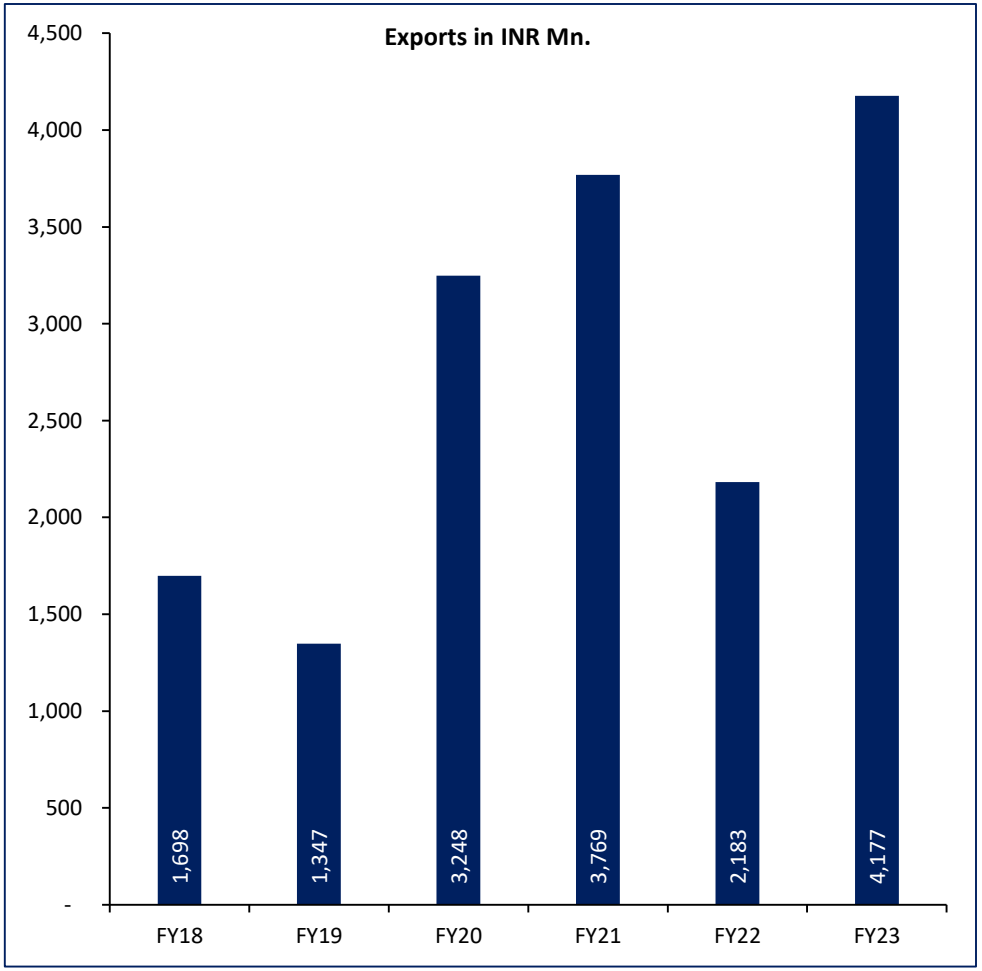
Opportunity in USD Mn.



Source: RHP Document, CEBPL

Export Opportunity

Last year the company exported US$ 48 mn & 2.4% of revenue, which is significantly lower of pie. Historically the company is not focusing on export market, exported range between approximately ~1%-3% of the total revenue. Now the company changing it strategy for exporting in FY24, we are expecting US$ 90-100 mn this year. Now the company is aggressively looking for exports. Participating in various programs, various discussions with customer, anticipating slight increase in in non-defence exports this year because of contribution from EVMs and VVPAT.



Source: Company, CEBPL

India Defence Avionics Market Forecast (CY 2021-2030)

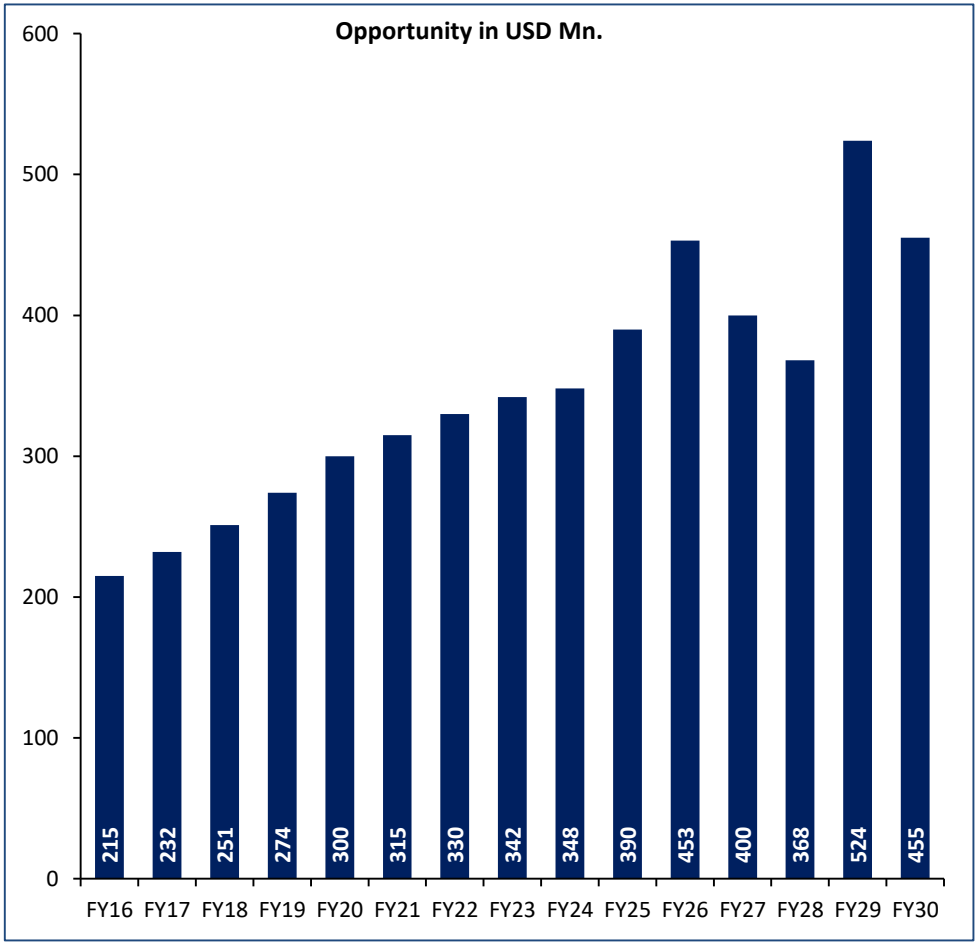
- The Defence electronics avionics market's dynamics are influenced by the frequency of modernization and replacement of existing platforms, alongside the procurement of new combat capabilities. Over the period from 2016 to 2020, the military avionics market accumulated a value of approximately $ 1.27 billion, showing a robust Compound Annual Growth Rate (CAGR) of 8.8%. In 2021, the Avionics market is estimated to be valued at around $ 315 million, and it is projected to reach approximately $ 454 million by 2030, with a CAGR of 4.2% over the decade.
- Major impetus for growth in this market will come from new aircraft procurements, particularly for fighter aircraft and helicopters with modern avionics capabilities. Companies capable of developing a comprehensive range of avionics solutions for these platforms, including the HAL LUH and LCA MK 1A, will find ample opportunities in India's pursuit of advanced avionics systems.

Programs Driving Military Avionics market

Programme Name	Avionics Opportunities
HAL Tejas Mark1/Mark 1A	HAL has secured orders for 40 Mark 1 variant aircraft, slated for delivery by 2022. Furthermore, in 2021, the Ministry of Defence placed an order for 83 advanced Tejas aircraft, equipped with cutting-edge features such as advanced AESA Radar, Jammers, superior avionics, next-gen BVR missiles, increased payload capacity, and extended combat range. The induction of these advanced Tejas aircraft is scheduled to be completed by 2028. Data Patterns has been the supplier of Smart Standby Display Units (Cockpit Displays) for this particular program.
MMRCA 2.0	In April 2018, India issued a Request for Information (RFI) to procure 114 multi-role combat aircraft for the Indian Air Force.
C295	Under the Make-in-India initiative, India is set to acquire 56 C-295 transport aircraft. The program has reached the financial approval stage, and the contract is expected to be finalized soon. The delivery schedule includes the supply of the first 16 planes within two years, with the remaining aircraft to be delivered over the following eight years.
HAL Light Utility Helicopter	In March 2021, MoD placed an initial order for 6 light utility helicopters for the Indian Air Force. The delivery of these helicopters is anticipated to begin in August 2022. Based on the plan for approximately 180 light utility helicopters, contracts worth around Rs 2500 million to 3000 million are expected for the required components. The number of light utility helicopters may increase further due to delays in finalizing the Kamov 226 program

Source: RHP Document, CEBPL

India Defence Avionics Market in USD Mn.

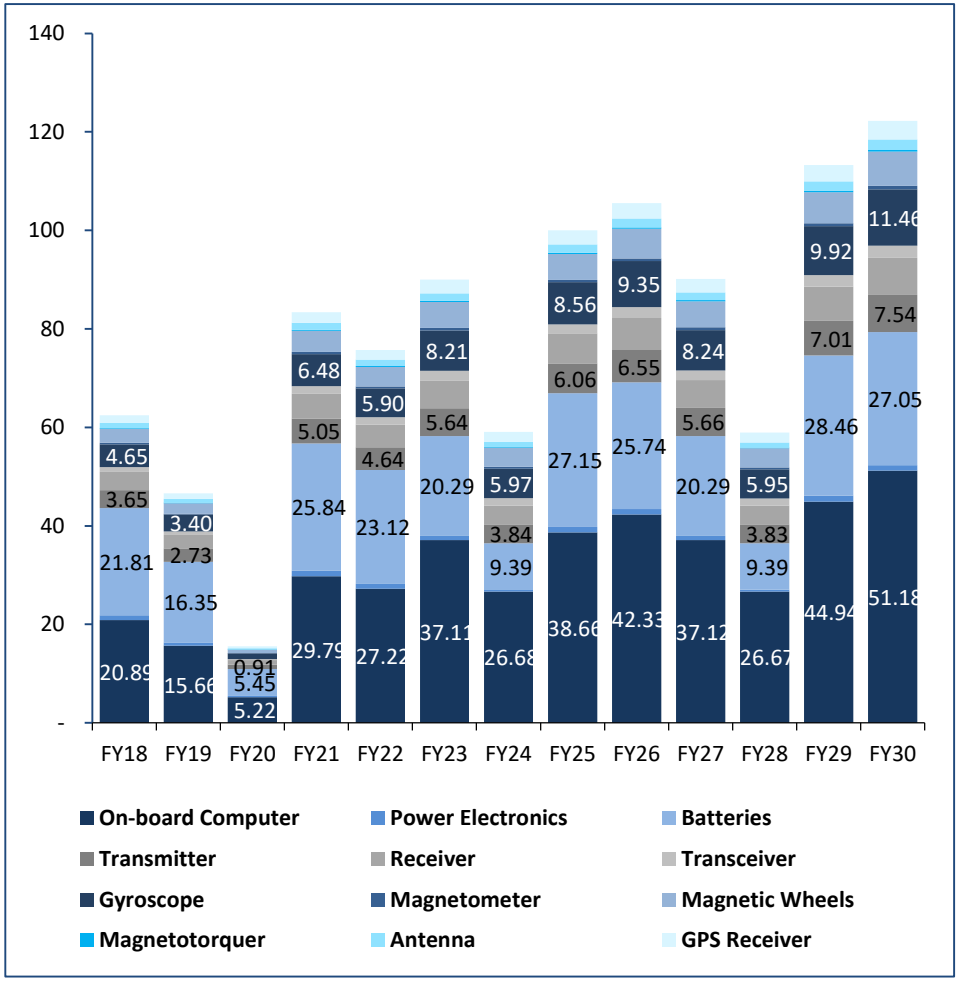


Source: RHP Document, CEBPL

Indian Satellite Manufacturing Components

- The demand for Indian market is mainly driven by civil government and commercial sectors having a market share of 88.70% and 11.29% respectively. The Key applications for the sector include IoT/M2M, Technology and Communication. In case of IoT/M2M the demand is 100% from commercial players. For Technology, the demand is mainly driven by Civil Government having a market share of 99.92%.

Indian Satellite Manufacturing Components Forecast (CY 2021-2030)

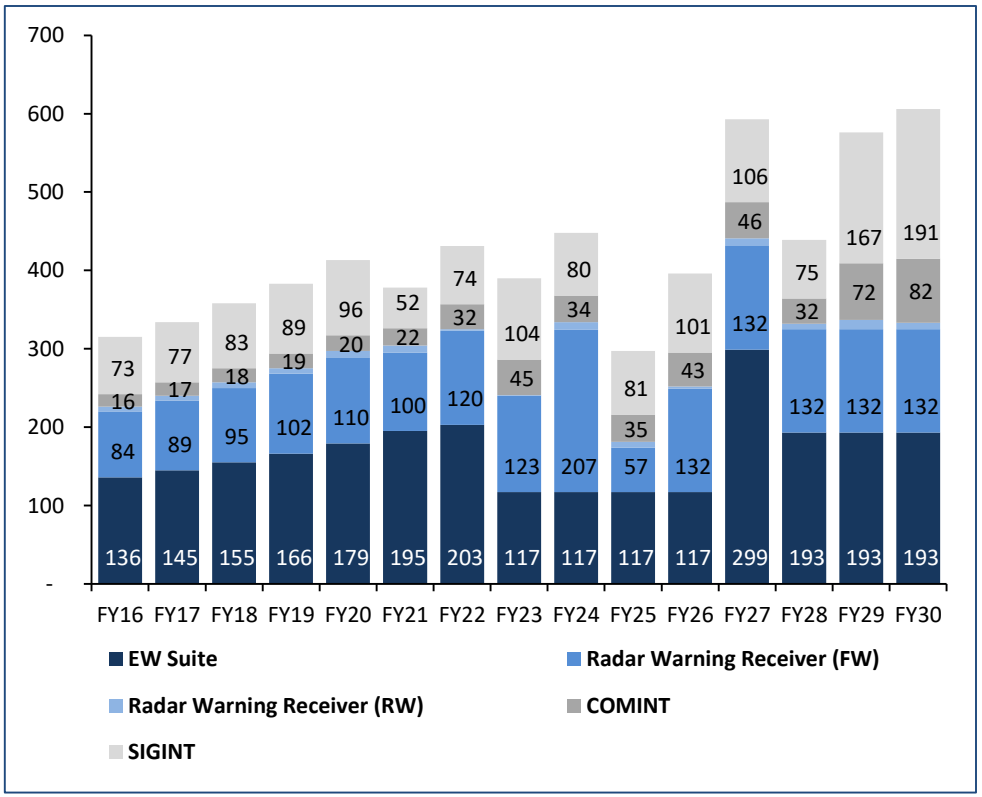


Source: RHP Document, CEBPL

Airborne EW

- The Airborne Electronic Warfare (EW) market demonstrated significant growth, accumulating a total value of approximately $1.8 billion from 2016 to 2020, with a Compound Annual Growth Rate (CAGR) of 7% during that period. As of 2021, the market is estimated to be valued at around $378 million, and it is projected to reach approximately $606 million by 2030, with a CAGR of 5.4%. The growth is primarily driven by the modernization of platforms, such as the Indian Air Force's (IAF) requirement for 200+ single-engine fighters, procurement of HAL Tejas, Dassault Rafale, A330s, C-295, and future acquisitions like the HAL AMCA. Additionally, modernization efforts for existing platforms will contribute to the market's expansion.

India Airborne EW Market in USD Mn.

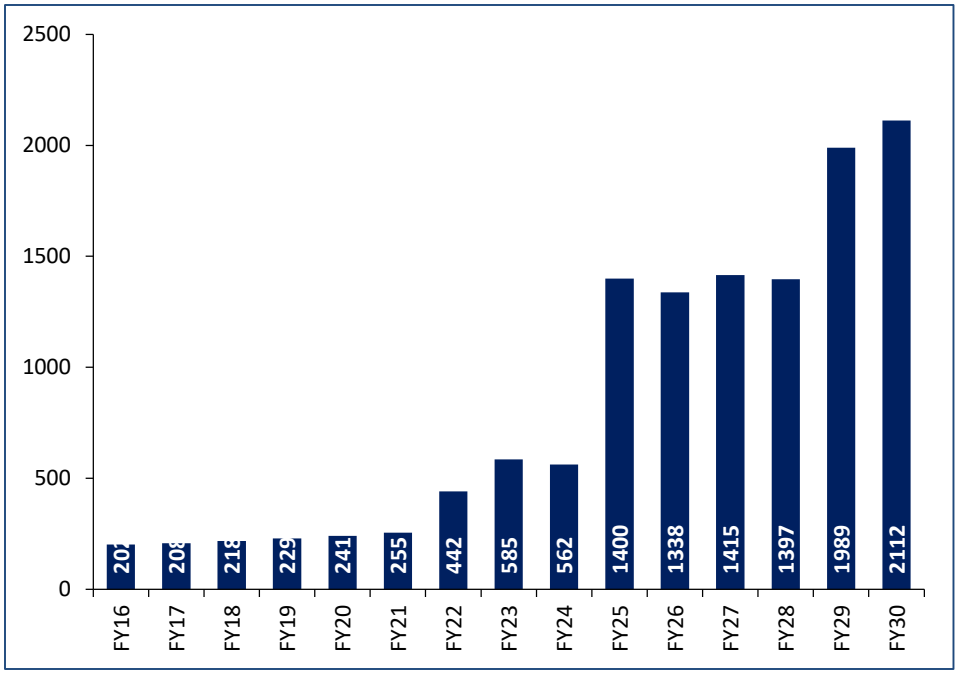


Source: RHP Document, CEBPL

India Defence Optics Market size

- Between 2016 and 2020, the Defence Optics market showed steady growth, reaching a cumulative value of approximately $1.09 billion, with a Compound Annual Growth Rate (CAGR) of 4.5%. The future expansion of this market will be fueled by significant procurements in airborne combat and Intelligence, Surveillance, and Reconnaissance (ISR) capabilities, along with land forces modernization. While the Naval sector will contribute to the market, its impact will be relatively limited compared to the Air Forces and Land Forces.
- As of 2021, the Defence Optics market is estimated to be valued at around $255 million. It is projected to reach approximately $2.1 billion by 2030, with a cumulative opportunity of approximately $11.49 billion, showcasing an impressive CAGR of 26.5%.

India Defence Optics Market in USD Mn.

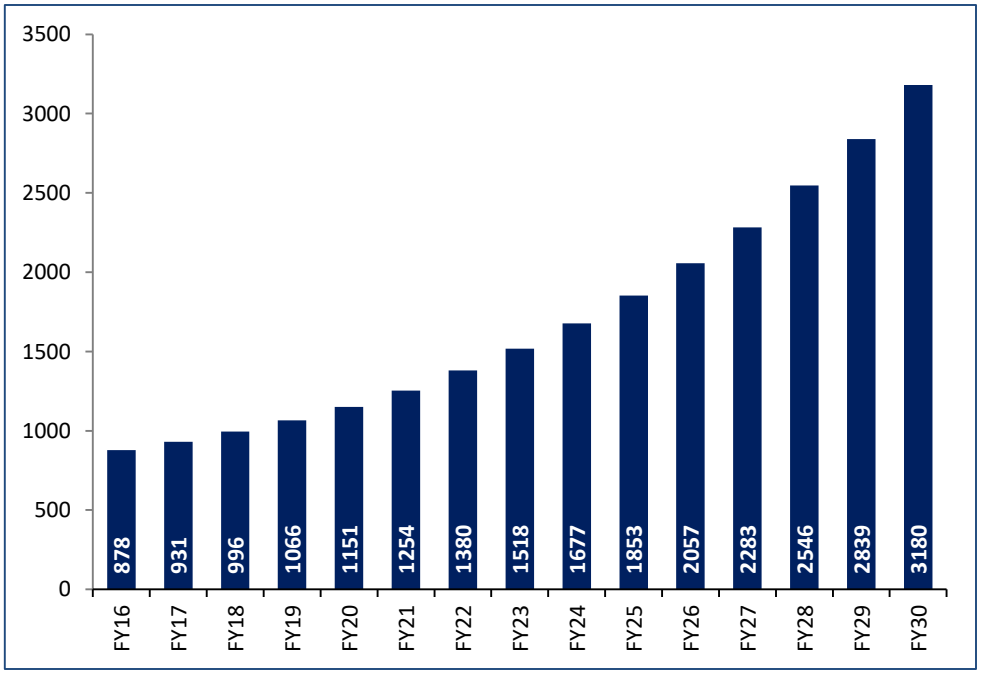


Source: Media search, CEBPL

Military Radar Market size

- The military radar market demonstrated substantial growth, accumulating a total value of approximately $5.02 billion from 2016 to 2020, with a Compound Annual Growth Rate (CAGR) of 7% during that period. As of 2021, the Radar market is estimated to be valued at around $1.25 billion, encompassing radars for ground, naval, and airfield applications.
- India, with approximately 14.5 thousand kilometers of land borders to monitor, of which approximately seven thousand kilometers are considered critical, presents a significant demand for radar systems. The country's naval fleet size of 133 platforms also offers substantial opportunities for radar modernization and upgrades in the future.
- The market is expected to continue its growth trajectory, reaching approximately $3.18 billion by 2030, exhibiting a CAGR of 10.9%. The total market opportunity during this period is projected to be approximately $20.59 billion.

Military Radar Market in graph in USD Mn.



Source: Media search, CEBPL

Operating Structure

BEL Optronic Devices Limited (BELOP) (Wholly-owned subsidiary) Manufacture of Image Intensifier Tubes used in night vision devices and dewar assembly for cooled thermal imager applications.

GE BE Private Limited (GEBEL) (JV - 26% shareholding) Manufacturing Medical Electronics Parts and X-Ray Tubes

Bharat Electronics Limited

BEL-THALES Systems Limited (BTSL) (Subsidiary - 74% stake) Design, develop, market, supply and support of Civilian and Select Defence Radars for Indian and Global markets and other end-users.

Defence Innovation Organisation (DIO) (50% shareholding) A 'Not for Profit' Company to fund innovation in the Defence sector

Key manufacturing products facility wise

Machilipatnam, Andhra Pradesh
- Electro Optic Equipment & Systems
- Anti Drone Systems

Chennai, Tamil Nadu
- Tank Electronics
- Gun Upgrades
- Airborne EO payloads
- Land Navigation Systems
- Gun Control Systems

Ghaziabad, Uttar Pradesh-
- Radar Systems
- Network Centric Systems
- Satcom & Cellular Communication
- Antenna Systems
- Air Traffic Mgmt. Solutions

Pune, Maharashtra
- Energy Storage
- Laser Products
- Fuzes
- Support Systems for AFVs
- Arms & Ammunitions

Bengaluru, Karnataka
- Missile Systems (Land & Naval)
- Land-based Radar systems
- Naval Systems (Sonars, Comm. Systems, Radar & FCS)
- Military Communication
- Electronic Warfare & Avionics
- Home Land Security & Smart Cities
- EVM/VVPAT
- Unmanned Systems
- Solar Systems and Solutions
- Space Electronics & Systems
- Strategic Components/Devices
- Medical Electronics
- Cyber & Network Security
- Software Solutions & AI
- Arms & Ammunitions
- Seekers

Panchkula, Haryana
- Tactical Communication
- Jammers
- Avionics (HUD)
- EV Charging Stations

Kotdwara, Uttarakhand
- Telecom Products /Systems
- VCCS Solutions
- Rail/Metro Solutions

Hyderabad, Telangana
- Electronic Warfare Systems

Navi Mumbai, Maharashtra
- Shelter Systems
- Power Systems
- Mast Systems
- Composites
- Blast Doors/Valves

Product competencies

Defence

Overview:
BEL develop a wide range of electronics equipment, systems and services for the Indian defence services. These are manufactured at our nine plants having 24 strategic business units (SBUs).

Product competencies
BEL have strong domain knowledge and core competencies in Radar and Fire Control Systems, Weapon Systems, Communication, Network Centric Systems (C4I), Electronic Warfare Systems, Avionics, Anti-Submarine Warfare Systems & Sonars, Electro-Optics, Tank Electronics, Gun Upgrades, Strategic Components. We have recently diversified into Arms & Ammunitions, Seekers & Missiles, Network & Cyber Security and Unmanned Systems.

Source: Company, CEBPL

Non-Defence

Overview:
BEL develop products and solutions for the civilian markets through select SBUs. We have a dedicated SBU for Homeland Security and Smart City (HS&SC) business and dedicated vertical for Medical Electronics and Solutions at Bengaluru unit given high growth opportunities.

Product competencies
BEL have competencies in the core areas of Electronic Voting Machine (EVM) & VVPAT, HS&SC, Software Solutions/Services, Healthcare Solutions, Civil Aviation and Solar Cells/Power Plants. We have also diversified into providing Railway/Metro/ Airport Solutions, Space Electronics and systems, Electric Vehicle charging infrastructure, Alternate Energy solutions, Secure Communication solutions and Software.

Source: Company, CEBPL

Diversification strategy

- As a diversification strategy, the Company has been exploring opportunities in allied defence and non defence areas for growth, leveraging its strengths & capabilities acquired in the defence electronics domain and capitalising on the conducive policy environment encouraging indigenous solutions. In the past 5 years, the non-defence portion, on an average in BEL's revenue is about 15-20% of total turnover. In FY23, the Company has about 12% of turnover from non-defence segment. BEL expect to achieve and grow the revenues from the non-defence business in the coming years to about 25% of sales.
- **Strategic alliance with foreign OEMs to address global markets :** BEL is working in many strategic and other areas of national importance such as Weapon systems, Surveillance, tracking and multifunction AESA-based radars, naval & airborne applications, Next Generation Electronic Warfare Suites and Counter Measure Systems, Air Defence Systems, including Seekers & Missiles, Unmanned Systems for Land, Air, Surface & Underwater Applications, Anti-Submarine Warfare Systems, Software Defined Radios for Tactical Applications, Network Centric Systems, Night Vision Devices etc.

- **BEL also form JVs like BEL-THALES Systems Limited (BTSL):** JV formed between BEL and Thales, France with an objective to engage in design, development, marketing, supply and support of civilian and select Defence radars for the Indian and global markets and also form various as

- MOU with Italian firearms manufacturing major Beretta Italy for indigenous manufacture of Close Quarter Carbine Weapons (CQB Carbines) and other Small Arms, required by Defence and other Non-Defence customers;
- MoU with Grene Robotics Pvt Ltd for the the development of Autonomous Manpads Data Link System (AMDLS),
- MoU with Larsen & Toubro Limited (L&T) to cooperate in addressing the needs of the evolving domestic and export markets for Defence products and systems and
- Also signed biggest export order worth $.93.15mn with Airbus Defence and Space for the manufacture and supply of Radar Warning Receiver (RWR) and Missile Approach Warning System (MAWS).

Source: Company, CEBPL

Some of the areas being focused upon in defence include	Some of the areas being focused in the non-defence include
Next Generation indigenous SAM Systems	Solutions for Civil Aviation sector including Air Traffic Management solutions
RF Seekers	Advance Ground Control Surface Movement Radar
Imaging Infra-Red (IIR) Seekers	Anti Drone systems
Arms & Ammunition and Explosives	Space/Satellite Electronics
Missile Electronics	Space Launch Vehicles
Unmanned Systems	Satellite Communication Services
Airborne Radars	Space grade Solar Cells
Thermal Imaging solutions for Night Vision Devices	Satellite Assembly & Integration
Indian Regional Navigation Satellite System (IRNSS) based Inertial Navigation Systems (INS) and solutions	Solar Business
Directed Energy Weapons	Railway and Metro Solutions
countermeasure systems for Air platforms	Software as a Service
Avionics systems for next. Gen Aircraft/Helicopters	Electric Vehicles (Li-ion & Fuel Cells Charging Stations etc.)
Software as a Service	Homeland Security & Smart City Businesses
Network & Cyber security etc.	Smart Meters
	range of Medical Electronics and health care solutions (ICU Ventilators
	Dialysis Machines
	Patient Monitoring System
	X-ray C arm
	Ultra sound, MRI
	Image/Voice/Video Analytics etc

Source: Company, CEBPL

R&D Focus Area for future growth

The Current technology areas for BEL's business segment: Missile Systems, Radars, Electronic warfare, Avionics, Military Communication, Naval Systems, Sonars, C4I Systems, Electro-Optics and Laser, Tank Electronics, Gun Upgrade, Civilian Equipment, Homeland Security, Medical Electronics and Components etc.

Defence: Next Generation indigenous SAM Systems, Airborne Radars, Arms & Ammunition and Explosives, RF Seekers, Imaging Infra-Red (IIR) Seekers, Strategic Electronics, Unmanned Systems, Thermal Imaging Detectors for Night Vision Devices, Indian Regional Navigation Satellite System (IRNSS) based Inertial Navigation Systems (INS) and solutions, laser-based Directed Energy Weapons, Helmet Mounted Display Systems (HMDS), Direct Infrared Counter Measures for Aircrafts & Helicopters, Software as a Service, Network & Cyber Security, Composites etc.

Strategic alliances for R&D Alliances are vital to strengthening our R&D capabilities and rapidly harnessing specialised technologies into the new products. It helps us in fulfilling the customer need for providing complete solution and platforms, thereby enhancing our market access and facilitating entry into new markets. Over the year, we have successfully enhanced collaborations with Defence Research Laboratories, National Laboratories, DPSUs, DIO iDEX, Academia, startups, niche technology companies, reputed global OEMs and Indian companies/ agencies.

Emerging Technologies: Quantum Cryptography, Photonics based Radars and ESM, High-powered lasers, Geospatial Analytics, Image Profiling using LiDARs, 5G communication, OFC based PIDS, 400G Optical Communication, Drone Guard Systems, Big Data Analytics, Intelligent Process Automation, Artificial Intelligence-based products, Unmanned Systems etc.

Non-Defence: Solutions for Civil Aviation sector including Air Traffic Controller Radars, Anti Drone systems, Space/Satellite Electronics, Space Launch Vehicles, Satellite Communication Services, Space Grade Solar Cells, Satellite Assembly & Integration, Solar Business, Railway and Metro Solutions, Software as a Service, Electric Vehicles, Homeland Security & Smart City Businesses, Energy Systems, a range of Medical Electronics & Healthcare Solutions, Intelligent Traffic Management Systems etc.

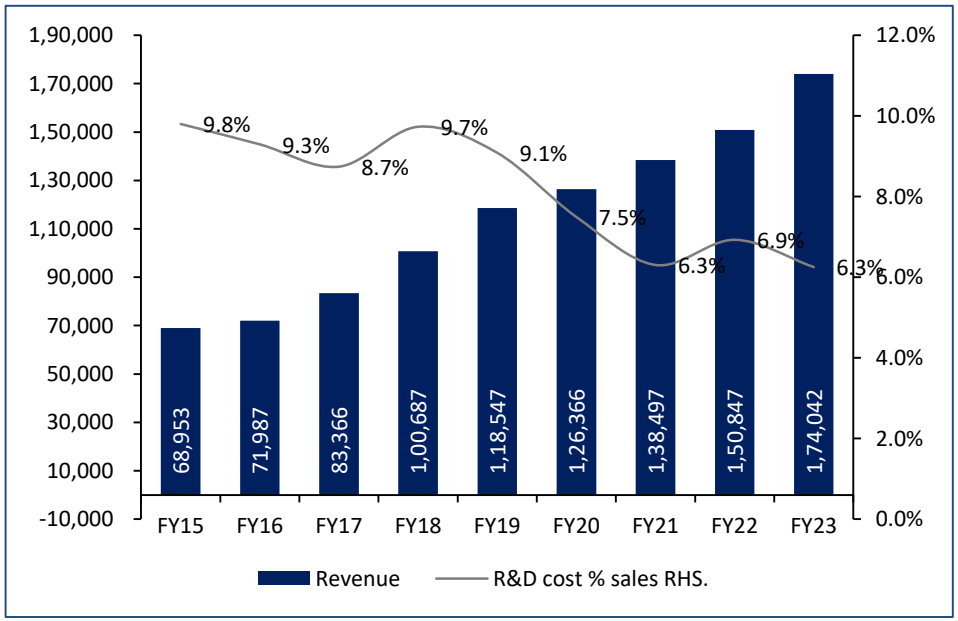
Source: Company, CEBPL

R&D Spend

- BEL has a Three-Tier R&D structure, namely, 1) Central Research Laboratories (CRLs); 2) Product Development and Innovation Centre (PD&IC) and Centres of Excellence (CoEs); 3) and Development and Engineering (D&E) groups attached to Strategic Business Units (SBUs)/Units. The R&D Labs (CRLs/ PD&IC/CoEs/D&Es) work in the identified technology and product areas, based on three-year R&D plans and after due approval of funds/time by the competent authority.

- Company is constantly investing in advanced and cutting-edge technologies to deliver differentiated products and solutions to the customers and progress towards commitment to increasing indigenization content and value addition in all the products/systems.

- BEL total investment in R&D Rs. 1088 crores, as a percentage of turnover during the year was 6.95%. The constant effort towards indigenous development that has led the company to achieve 78% of turnover from indigenous products. The revenue generated from products manufactured through ToT from foreign OEMs is 22%.

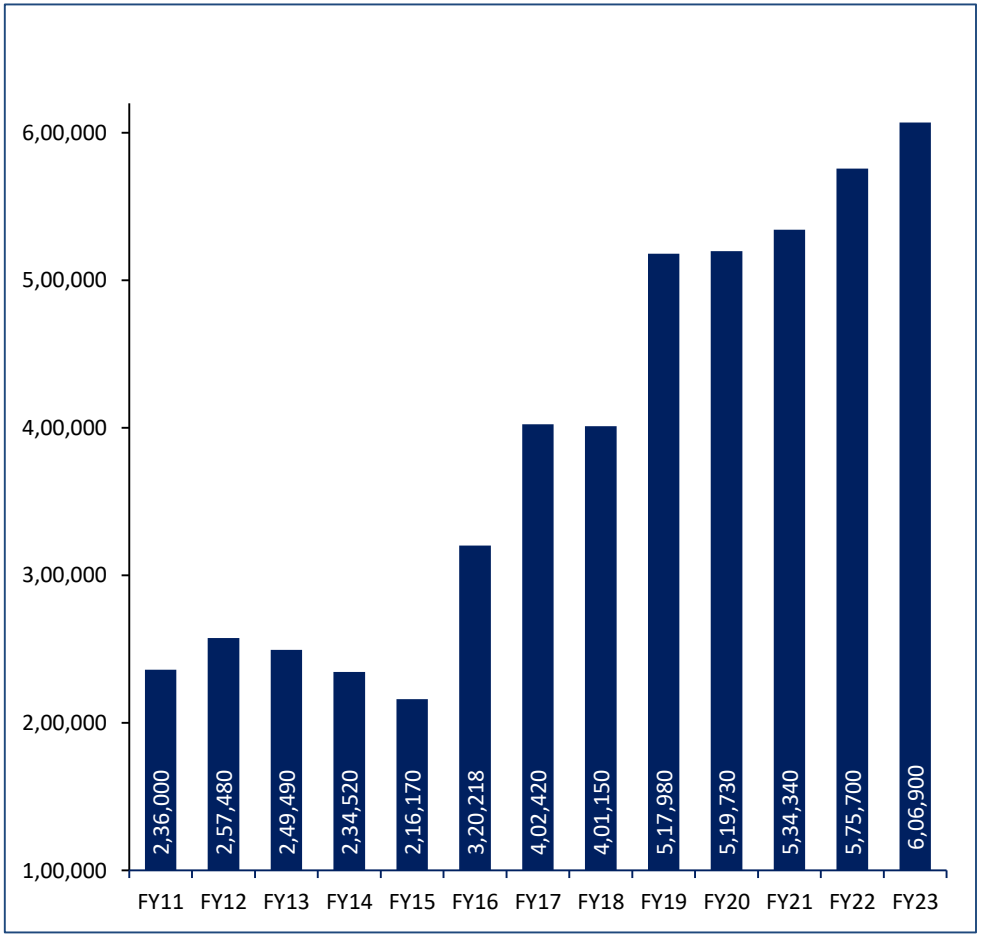


Source: Company, CEBPL

Order Book

- The current order book as of 31st march 2023 is Rs. 656bn which is 3.7X of FY23. Management has guided a Rs.20,000+ crores order for FY24. During the first quarter of this financial year the company is bagged Rs. 8091 crores of order.

- This order consists of 2 Regiments of Improved Akash Prime Weapon System (Rs. 3914 Crore) and Other Significant Orders valued at Rs. 1984 Crore. Another order worth Rs.2191 crores received new Defence and non-Defence orders.



Source: Company, CEBPL

Key Management

Name	Description
Shri. Bhanu Prakash Srivastava Director (Other Units) Additional Charge, Chairman & Managing Director	Shri. Bhanu Prakash Srivastava, Director (Other Units) of BEL since April 20, 2022, assumed Additional Charge as Chairman & Managing Director and Director (Marketing) on November 1, 2022. With a degree in Mechanical Engineering and Master of Business Administration, Srivastava has 36 years of experience in various functions at BEL, including Manufacturing, Project Management, Quality Management, Materials Management, Design & Development, and Product Support. He has contributed to sustained business growth and profitability in various areas, including Radio & Data equipment, Military and Telecom Switching Equipment, C4I Systems, Radars, Sonars, Fire Control Systems & Communication systems, and Surface-to-Air Missile projects.
Shri. Vinay Kumar Katyal Director (Bangalore Complex)	Shri. Vinay Kumar Katyal, a B.Tech in Electronics & Communication from IIT-BHU, has been the Director of the Bangalore Complex of BEL since November 27, 2018. He joined BEL in 1985 as Deputy Engineer and worked on the development of various products, including the first-of-its-kind Frequency Hopping Tank Radio, Bharati radio set, MSK Demodulator, encryption products, and cell phone jammers. In 2010, he promoted to Additional General Manager in the Military Communication Strategic Business Unit at BEL's Bangalore Unit. In 2014, he became General Manager of the Product Development & Innovation Center (PD&IC) and later Director of the Bangalore Complex.
Shri. Manoj Jain Director (R&D)	Shri. Manoj Jain, Director (R&D) of BEL since September 26, 2022, assumed Additional Charge as Director (HR) on November 1, 2022. He has over three decades of experience in Research & Development, including Digital Multiplexers, Cross Connects, CDOT Exchanges, and Military Switches. Jain has also worked at BEL's Central Research Laboratory, developing technologies for Defence Networks and Network & Bulk Security Solutions. He served as Chief Scientist of CRL-Bangalore and General Manager of BEL's Product Development & Innovation Centre (PD&IC). Jain has received numerous R&D awards, published technical papers, applied for patents, and delivered talks to Defence users and DRDOs.
Shri. Damodar Bhattad Director (Finance)	Shri. Damodar Bhattad S has been appointed as the Director (Finance) of Navratna Defence PSU Bharat Electronics Limited (BEL) effective January 11, 2023. With over 34 years of experience, he has played a significant role in formulating company policies and procedures, achieving a high turnover of Rs. 15,044 Cr in FY22 and an order book of over Rs. 50,000 Cr. As Head of Funds, he efficiently managed Working Capital and ensured BEL remained debt-free. Bhattad has also initiated surplus funds investment in Mutual Funds, increasing the company's returns from Treasury Management. He has been a member of various Management Committees, including the Management Audit Committee, Corporate Risk Management Committee, CSR Screening Committee, Invitee of Audit Committee, and Capital Investment Committee. Bhattad supports initiatives that increase BEL's value for shareholders, such as higher dividend payout and capitalization of reserves. He has also been a member and Finance representative of BEL's Pension Trust and Gratuity Trust, ensuring a suitable portfolio to minimize risk and maximize returns.

Source: Company, CEBPL

Name	Description
Shri. Vikraman N Director (HR)	Shri. Vikraman N, the Director (HR) of Navratna Defence PSU Bharat Electronics Limited (BEL), took charge on June 1, 2023. With 35 years of experience in HR and diverse functions, he has managed BEL's second-largest unit to its highest turnover and profitability. Vikraman has been recognized for his innovation and is a certified Project Management Professional from the Project Management Institute, USA. He has institutionalized HR policies and strategies, introduced a comprehensive framework for competency development, and received the People Capability Maturity Model certification. He has also established the BEL Academy for Excellence and partnered with national and international academia. Vikraman has also implemented changes in key HR processes to ensure workforce safety during the pandemic and successfully managed over 100 stakeholders involved in the Akash project, completing the country's first indigenous missile system.
Shri. K V Suresh Kumar Director (Marketing)	Shri. Kaipa Venkata Suresh Kumar, a post-graduate in Electronics & Communications engineering, has been appointed as Director (Marketing) of Navratna Defence PSU Bharat Electronics Limited (BEL) on June 16, 2023. With 34 years of experience, he has worked on various technologies and held key corporate positions, including Chief Indigenisation Officer. Kumar has contributed to the company's business development through R&D, creating numerous patents and copyrights. He led a team of 500 engineers in in-house development of technology modules across 16 verticals and drove IP generation and skill enhancement initiatives at PD&IC. Prior to his appointment, Kumar served as General Manager (Technology Planning) at BEL's Corporate Office, spearheading planning and execution of all R&D activities. His efforts led to the induction of advanced airborne EW systems onto IAF fighter aircraft, resulting in orders worth Rs. 3,000 Cr. He also generated future business opportunities worth about Rs. 4,000 Cr. Since 2021, Kumar has been serving as the Chief Indigenisation Officer of BEL, contributing to the Government's 'Atmanirbhar Bharat Abhiyan' and saving over Rs. 1,000 Cr FE in the last two years through indigenisation efforts.

Source: Company, CEBPL

Key Milestones

Year	Brief Description
1956	Starting with manufacturer of a few communication equipment
1962	Germanium semiconductor
1964	Radio transmitter for AIR with help from Soviet Union
1966	set up a radar manufacturing facility for the army and in-house R&D
1967	BEL began manufacturing transmitting tubes, silicon devices and integrated circuits
1968	The PCB manufacturing facility was established
1970	BEL started making black & white TV picture tubes, X-ray tubes and microwave tubes
1971	BEL set up facilities for the manufacture of integrated circuits and hybrid micro circuits
1972	BEL established manufacturing facilities for TV transmitters for Doordarshan
1973	BEL began manufacturing frigate radars for the navy
1974	he second unit of BEL was set up at Ghaziabad to manufacture radars and Tropo communication equipment for the Indian Air Force.
1979	The third unit was established at Pune to manufacture image converter and image intensifier tubes
1980	the first overseas office of BEL was set up in New York for the procurement of components and materials.
1981	A manufacturing facility for magnesium manganese dioxide batteries was set up at Pune
1982	Space Electronic Division was set up at Bangalore to support the satellite programmes
1982	BEL achieved a turnover of ₹1 billion (US$21 million).
1983	the Andhra Scientific Company (ASCO) was taken over by BEL converted it to its fourth manufacturing unit at Machilipatnam
1985	the fifth unit was set up in Chennai for supply of tank electronics, with proximity to Heavy Vehicles Factory, Chennai of the Ordnance Ordnance Factory Board. The sixth unit was set up at Panchkula the same year to manufacture military communication equipment.
1986	BEL set up three units. Its seventh unit was set up at Kotdwara to manufacture switching equipment, the eighth unit to manufacture TV glass shell at Taloja (Navi Mumbai) and the ninth unit at Hyderabad to manufacture electronic warfare equipment
1987	a separate Naval Equipment Division was set up at Bangalore to give greater focus to naval projects
1988	first Central Research Laboratory was established at Bangalore to focus on R&D

Source: Company, CEBPL

Key Milestones Continued…

1989	BEL started manufacturing telecom switching and transmission systems and also the set up the Mass Manufacturing Facility in Bangalore and the manufacture of the first batch of 75,000 electronic voting machines
1990	he agreement for setting up BEL's first joint venture company, BE DELFT, with M/s Delft of Holland, was signed
1992	The second Central Research Laboratory was established at Ghaziabad listing of the company's shares in the Bangalore and Mumbai Stock Exchanges took place in same year
1996	BEL achieved ₹10 billion (US$215 million) turnover
1997	GE BEL, the second joint venture company with M/s GE, USA, was formed as also the third JVC with M/s Multitone, UK, BEL Multitone. The same year, the US imposed supply restrictions on BEL
1998	BEL set up its second overseas office at Singapore to source components from South East Asia. In the same year US and Europe imposed sanctions on BEL. The company was able to overcome the effects of the sanctions and kept up the promised deliveries to customers
2000	BEL reorganised its Bangalore unit into six Strategic Business Units (SBUs). The R&D groups in Bangalore were also restructured into Specific Core Groups and Product Development Groups. The same year, BEL shares were listed in the National Stock Exchange
2002	BEL became the first defence PSU to achieve operational Mini Ratna Category I status
2003	the company's turnover crossed the ₹25 billion mark (US$540 million).
2005	BEL had a turnover of ₹32.20 billion (US$695 million). BEL achieved a turnover of ₹35.60 billion (US$767 million) in 2005–06
2010	Boeing announced that it received the Data Link II communications technology for the Indian Navy's P-8I from Bharat Electronics Limited BEL delivered the Indian-designed communications system that would enable the exchange of tactical data and messages between Indian Navy aircraft, ships and shore establishments. Boeing installed the system during final assembly of P-8I
2011	the Indian government-owned Bharat Electronic Limited (BEL) showcased its entire range of C4ISR capabilities including network centric warfare technologies developed in-house at Aero India 2011
2019	the Indian government-owned Bharat Electronic Limited (BEL) was awarded the tender to implement the project "Integrated Command and Control Centre" for Gangtok smart City under Smart Cities Mission initiated by the Ministry of Housing & Urban Affairs, Government of India.
2022	Increased contract manufacturing portfolio by increasing empanelment of BEL as global supply chain partner with OEMs

Source: Company, CEBPL

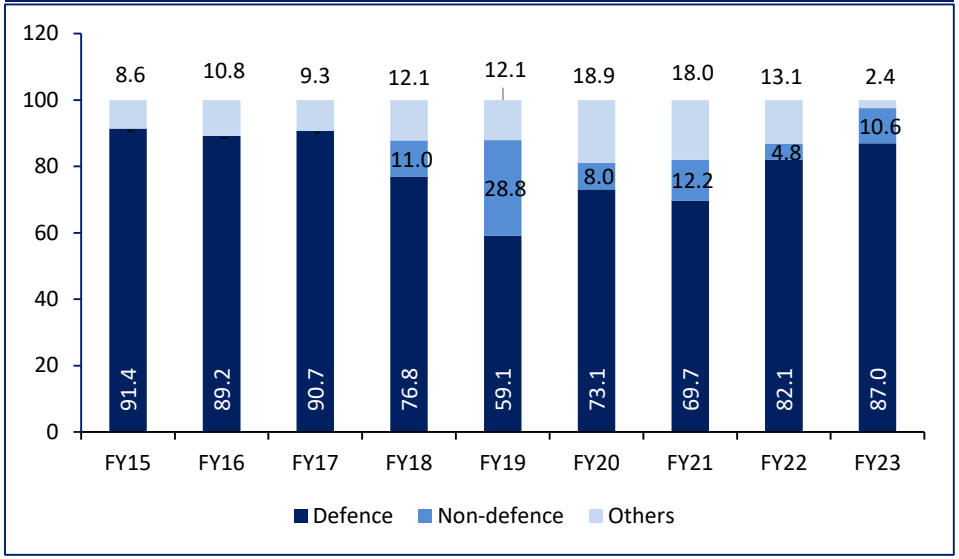
Shareholding Pattern (%)

	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23
President of India	51.14	51.14	51.14	51.14	51.14	51.14	51.14	51.14	51.14	51.14	51.14	51.14
FIIs:	9.60	10.25	11.58	14.10	15.73	17.21	16.77	15.99	17.36	17.34	16.42	17.35
Public:	7.67	7.32	7.07	5.85	4.81	4.89	5.38	5.11	5.88	6.47	6.95	6.68
DIIs:	31.59	31.30	30.21	28.92	28.33	26.77	26.71	27.77	25.63	25.04	25.50	24.84
Cpse exchange traded scheme	4.98	5.71	5.65	5.33	4.69	4.04	4.46	4.79	4.51	4.19	4.26	4.08
Hdfc trustee company ltd	5.61	5.46	5.6	4.9	5.65	5.33	5.19	5.11	3.93	3.37	3.08	2.76
Kotak flexicap fund			3.4	3.46	3.51	3.57	3.83	3.78	3.51	3.48	3.48	3.49
Kotak standard multicap fund	3.28	3.17										
SBI blue chip Fund			2.29									
SBI equity hybrid Fund	2.22	2.36		2.48	1.96	1.83						
Mirae asset large cap fund	2.78	2.77	2.37	2.16	2.25	1.96	1.93	1.3	1.05			
Bharat 22 ETF	1.43	1.48										
Life insurance corporation of India	2.34	1.31	1.25	1.25	1.03	1.28	1.28	1.31				
Canara Robeco mutual fund									1.07	1.21	1.25	1.3
Franklin India prima fund	1.16	1.15	1.12	1.12	1.13							
Nps trust											1.08	1.06
Dsp flexi cap fund											1.02	1.08
Investo India contra fund				1.01								
Public:	7.67	7.32	7.07	5.85	4.81	4.89	5.38	5.11	5.88	6.47	6.95	6.68

Source: Company, CEBPL

Diversification Strategy- Non Defence

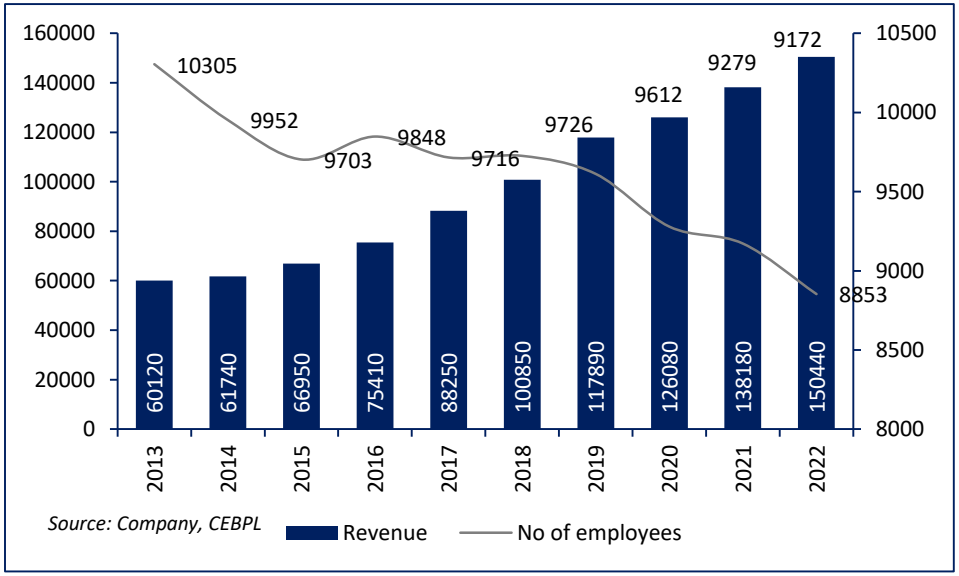
Revenue mix in %



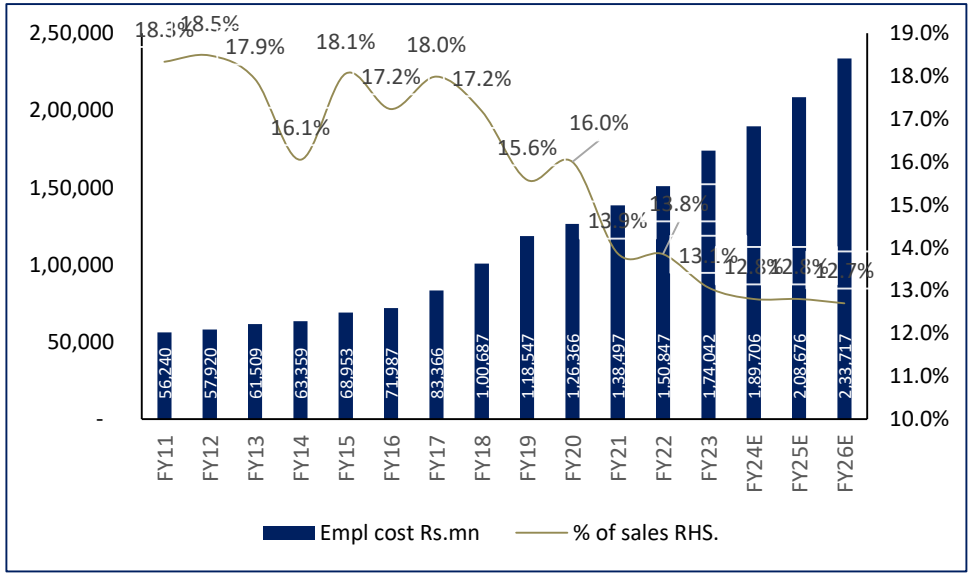
Source: Company, CEBPL

- BEL is actively investing to address diversification initiatives. 10.4% of revenue comes from the non defense sector, and it is expected increase 25% of revenue.
- The company has taken several steps to improve operational efficiency to maximize its margins.
- The company is reducing its employee cost significantly from 18% in 2018 to ~13.8% in FY23. we are expecting the employee cost will stand ~12% in FY26.
- because now the company is focusing on manufacture of systems and outsourced most of its component Tier 2 and Tier 3 suppliers.

Focusing on Operational efficiency



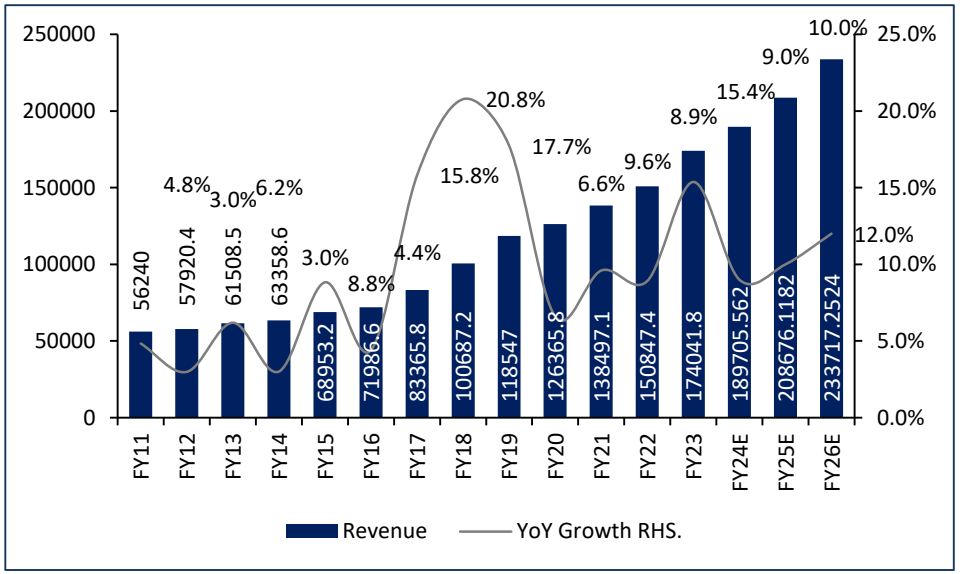
Source: Company, CEBPL



Source: Company, CEBPL

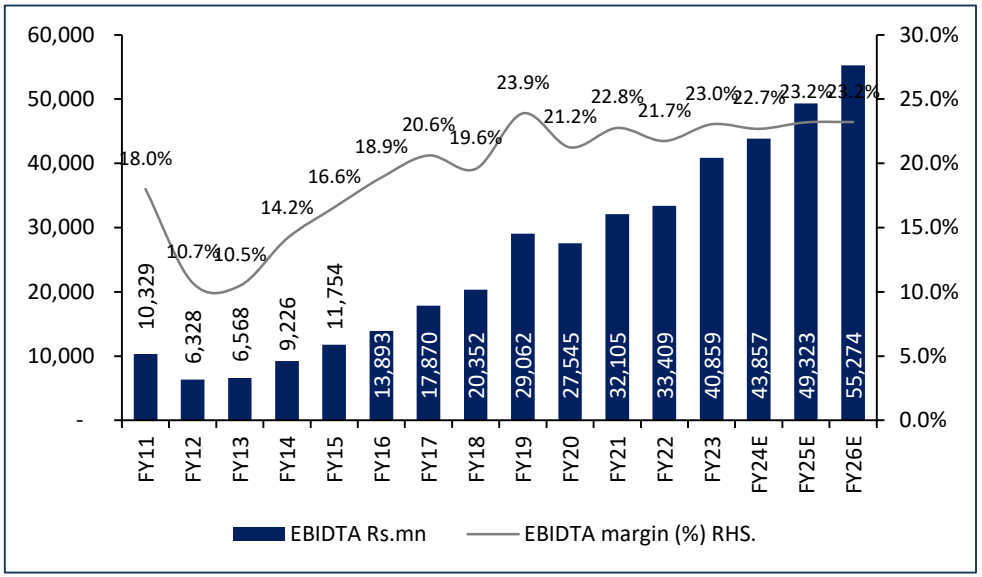
Story in charts

Revenue to grow on faster completion of contracts



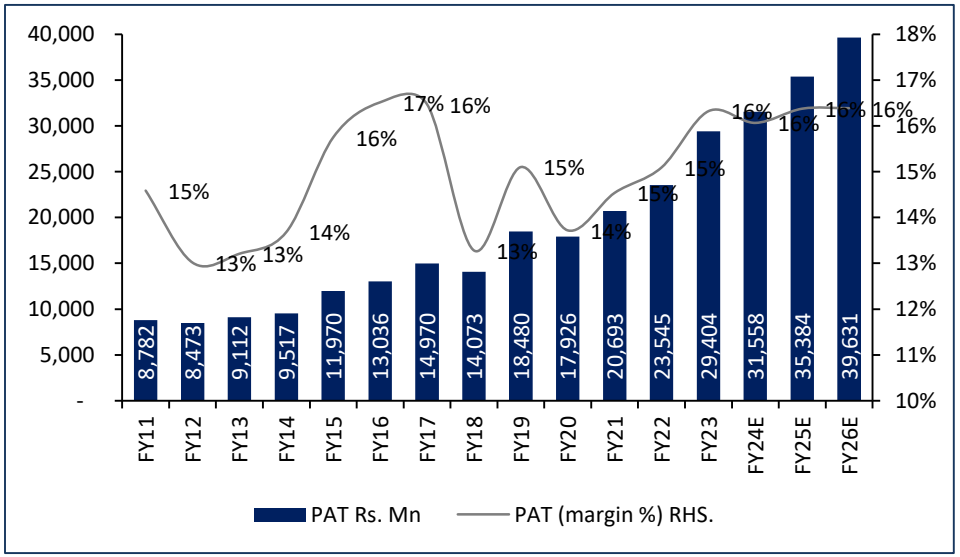
Source: Company, CEBPL

Sustained EBITDA Margin



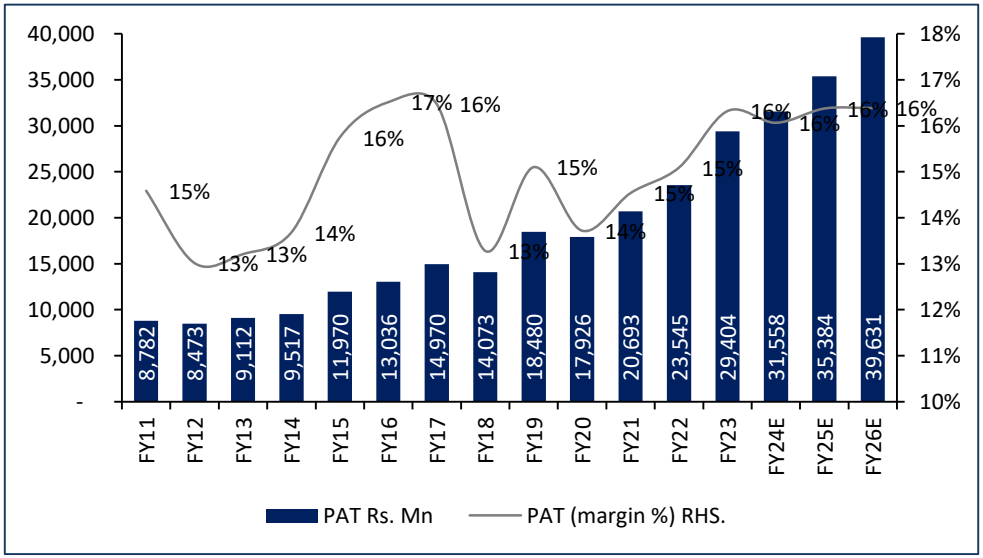
Source: Company, CEBPL

PAT (Rs. Mn.) and YoY (%) growth



Source: Company, CEBPL

RoE and RoCE trend



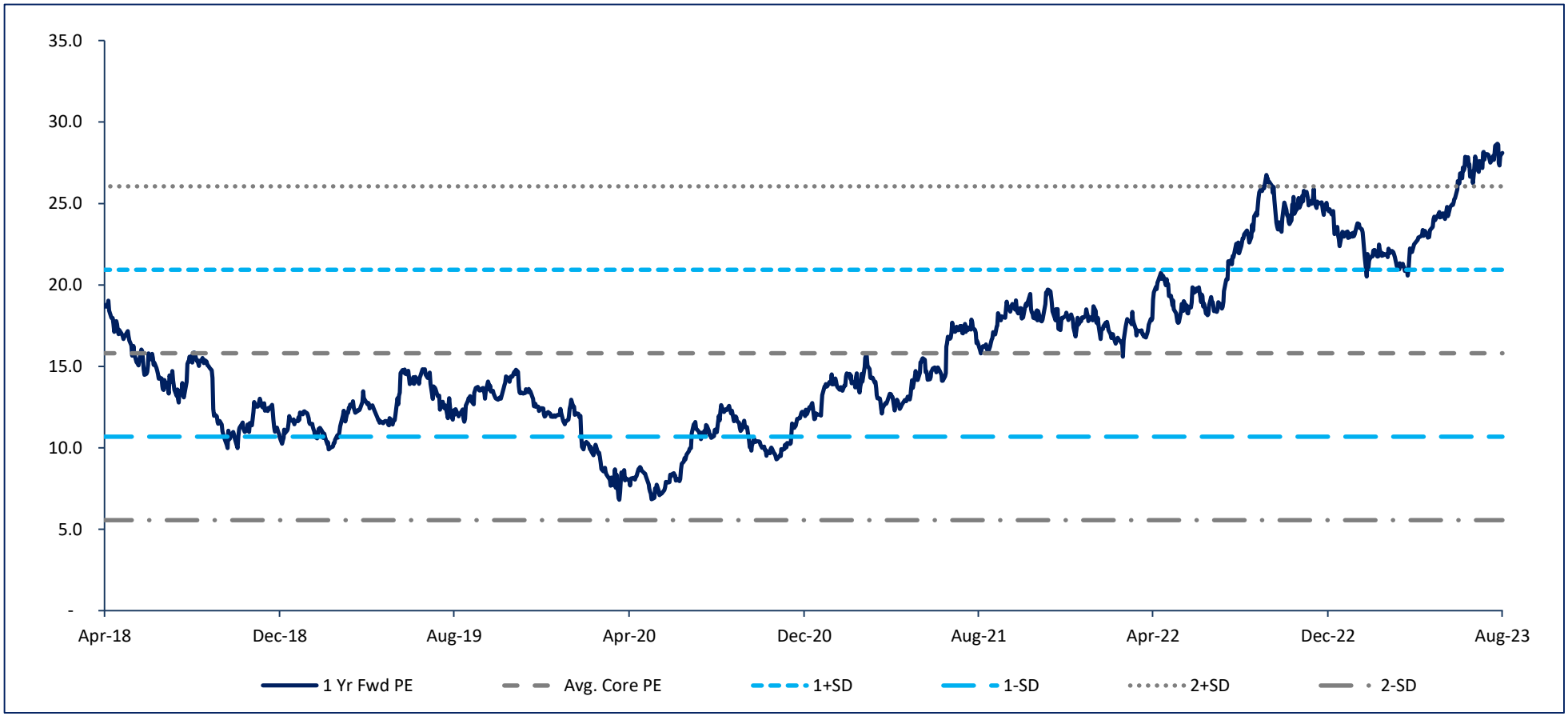
Source: Company, CEBPL

Huge Product Portfolio

SL No	Systems (Defence Range)	Products
1	Communication	RADIOS, BASE STATIONS / REPEATERS: VLF, VHF, V/UHF, UHF, Micro Wave, SATCOM, Software Defined, Radio Relays, Switching equipment's, Data Communication, Communication Systems and Network, Encryption, Versatile, Control System, GPS Receiver, Accessories.
2	Radars	Land Based: Surveillance, Tracking, Weapon, Locating, Fire Control, Mine Detection, Air Traffic, Control Radar, Antennae and Accessories. Sea Based: Surveillance, Tracking, Fire Control, Navigation, Secondary Surveillance.
3	Underwater System	Sonar, Transducers, Decoys, Warfare System, Control Equipment, Sonobuoys.
4	Fire Control Systems	Land Based and Sea Based.
S	Electronic Warfare Systems and Advance	Radar ESW, Communication EW/Signet/Comint System, Jammers, Integrated Electronic Warfare System, Warning Receiver and Direction Finders, Avionics.
6	Electro-Optics	Laser Range Finders and Laser Target Designators: Non eye safe/eye safe night vision devices: image intensifier tube based/cooled & uncooled thermal imager weapon sights. Optical devices: Microscopes, Binoculars, Lenses, RPL Dosimeters.
7	Tank Electronics	Stabilizers, Drive System, Fire Control, sighting system, land navigation, tank intercom and electronic system, net centric system.
8	Command control system	Decision support system, air defense system, Coastal surveillance system, combat management system for all.
9	Simulators	Driving simulator, weapon simulator, radar simulator.
10	Shelters & Masts	Shelters: Riveted, welded, EM/EMC and EMP shelters. Masts: Pull-up, pneumatic and hydrolic masts.
11	Components & Batteries	High power, microwave tubes, microwave super components, hybrid micro circuits, ASICs, T/R modules, etc.
12	Weapon system/Missile system	Gun control equipment for artillery, naval gun and missile equipment surface to air missile system, for light armored multi-purpose vehicle for army.

Source: Company, CEBPL

Bharat Electronics Limited PE Band



Source: Company, CEBPL

Key Financials

Bharat Electronics Limited (INR mn)	FY22	FY23	FY24E	FY25E	FY26E
Income Statement					
Revenue	1,53,682	1,77,344	1,93,338	2,12,672	2,38,113
Gross profit	**64,710**	**79,069**	**84,714**	**93,834**	**1,04,853**
EBITDA	33,409	40,859	43,857	49,323	55,274
Depreciation	4,011	4,288	4,769	5,462	6,110
EBIT	29,398	36,571	39,089	43,861	49,164
Interest expense	51	150	100	80	60
Other Income	2,315	2,808	3,089	3,398	3,737
EO Items	-	-	-	-	-
PAT	**23,545**	**29,404**	**31,558**	**35,384**	**39,631**
Adjusted PAT	23,989	29,844	31,558	35,384	39,631
EPS	3.3	4.1	4.3	4.8	5.4
NOPAT	21,860	27,411	29,316	32,896	36,873
Balance Sheet					
Net worth	1,22,859	1,38,616	1,49,016	1,59,267	1,70,737
Minority Interest	-	-	-	-	-
Deferred tax	-	-	-	-	-
Total debt	-	-	-	-	-
Other liabilities & provisions	20,422	10,609	11,378	12,616	13,878
Total Net Worth & liabilities	**1,43,281**	**1,49,225**	**1,60,394**	**1,71,884**	**1,84,615**
Net Fixed Assets	26,752	26,752	26,983	27,521	27,411
Capital Work in progress	4,459	3,612	3,612	4,000	4,150
Investments	2,330	2,008	2,000	2,000	2,000
Cash & bank balance	75,637	80,000	87,523	76,933	69,272
Loans & Advances & other assets	32,613	22,033	29,626	32,589	36,499
Net Current Assets	77,127	94,820	98,173	1,05,774	1,14,554
Total Assets	**1,43,281**	**1,49,225**	**1,60,394**	**1,71,884**	**1,84,615**
Capital Employed	1,22,859	1,38,616	1,49,016	1,59,267	1,70,737
Invested Capital	47,222	58,616	61,493	82,334	1,01,465
Net Debt	(75,637)	(80,000)	(87,523)	(76,933)	(69,272)
FCFF	61,500	11,144	43,027	24,745	32,683
Cash Flows					
Cash flows from Operations	66,972	17,031	48,027	31,133	38,833
Capex	(5,472)	(5,888)	(5,000)	(6,388)	(6,150)
FCF	61,500	11,144	43,027	24,745	32,683
Cash flows from Investing	(48,717)	26,908	(4,992)	(6,388)	(6,150)
Cash flows from Financing	(10,776)	(13,129)	(21,258)	(25,213)	(28,222)

Source: Company, CEBPL

Bharat Electronics Limited	FY22	FY23	FY24E	FY25E	FY26E
Growth Ratios					
Revenue (%)	8.9	15.4	9.0	10.0	12.0
EBITDA (%)	4.1	22.3	7.3	12.5	12.1
PAT (%)	14.3	24.4	5.7	12.1	12.0
Margin ratios					
EBITDA margins (%)	21.7	23.0	22.7	23.2	23.2
PAT Margins (%)	15.6	16.8	16.3	16.6	16.6
Performance ratios					
OCF/EBITDA	2.0	0.4	1.1	0.6	0.7
OCF/IC	141.8	29.1	78.1	37.8	38.3
RoE (%)	19.5	21.5	21.2	22.2	23.2
ROCE (%)	23.9	26.4	26.2	27.5	28.8
Turnover Ratio (Days)					
Inventory	133	133	135	136	136
Debtors	145	144	144	145	145
Payables	80	69	70	75	75
Cash Conversion Cycle	4	31	23	52	72
Financial Stability ratios					
Net debt to Equity (x)	(0.6)	(0.6)	(0.6)	(0.5)	(0.4)
Net debt to EBITDA (x)	(2.3)	(2.0)	(2.0)	(1.6)	(1.3)
Interest Cover(x)	582.1	244.6	390.9	548.3	819.4
Valuation metrics					
Fully diluted shares (mn)	7,310	7,310	7,310	7,310	7,310
Price (INR)	131.0	131.0	131.0	131.0	131.0
Market Cap (INR mn)	9,57,581	9,57,581	9,57,581	9,57,581	9,57,581
PE(x)	40	32	30.3	27.1	24.2
EV (INR mn)	8,81,944	8,77,581	8,70,058	8,80,648	8,88,309
EV/EBITDA (x)	26	21	20	18	16
Book Value (INR/share)	17	19	20	22	23
Price to BV (x)	7.8	6.9	6.4	6.0	5.6
EV/OCF (x)	13	52	18	28	23

Source: Company, CEBPL

Choice

Data Patterns Limited

Aiming for supersonic growth

Defence Initiation

Choice Equity Broking Private Ltd.

Data Patterns Limited

Aiming for supersonic growth

Defence Initiation

August 2023

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Data Pattern Limited - Aiming for supersonic growth

NEUTRAL

Data Patterns (India) Limited (DPL) is a defense and aerospace electronics solutions provider catering to the indigenously developed defense products industry with in-house design and development capabilities. The company has in-house design and development and design capabilities across the entire spectrum of strategic defense and aerospace electronics solutions including processors, power, radio frequencies ("RF") and microwave, embedded software and firmware, and mechanical engineering. DPL's core competencies include electronic hardware design and development, software design and development, firmware design and development, mechanical design and development, product prototype design and development, functional testing and validation, environment testing and verification, and engineering services opportunities. Companies' products cater to all the platforms, viz., space, air, land, and sea, including products for LCA-Tejas, Light Utility Helicopter, and BrahMos missiles. As on March 31, 2023, there are 1,130 employees with more than 700 qualified engineers.

Investment Thesis

- **Equipped with technical capabilities to participate in major defense programs:** ODTAT pattern with its R&D and technological capabilities, the company is able to participate in the land, airborne and naval programs and have capabilities across the entire spectrum of strategic defense and aerospace electronics solutions including processors, power, radio frequencies ("RF") and microwave, embedded software and firmware and mechanical engineering. Further, it has a library of more than 1000 reusable building blocks that can be used on multiple end systems, which allowed the company to develop complete systems and sub-systems across platforms for space, air, land, and sea. DPL has participated in some of the major programs like Airborne RWR, ELINT, and SDR are currently in the testing and flight trial stage, while cockpit displays for LUH, antenna electronics for Ashwini and Arudhra Radars.
- **Leveraging core competency to grow export business:** DPL is looking to further increase its export market in various sectors, such as industrial automation, telecom, automobile (electronic sub-systems), medical (electronic sub-systems) and nuclear by identifying market opportunities in overseas jurisdictions and tie up with local partners to utilize our existing product portfolio and further develop products. As global spending in defense continues to increase in order to narrow the gap with other countries' military capabilities, we believe export opportunities for players like DPL bode well. DPL export share improved from 5.76% in FY20 to 16% in FY23. Export revenue order ex-offset margin is better as the company supplies the full system against the sub-system in the offset category**.**
- **Healthy order book:** DPL enjoys a healthy order book which is Rs1065cr(as of July 2023), 2.3x of FY23 sales. The company derived most of the order book from the development program (64% from development) vs 29% of revenue share in FY23. DPL currently engages in various programs such as RADAR (Rs.448cr), and EW-DRDO-Rs.53cr, TANK- DRDO-Rs34.5cr. Further company is participating in various programs (below) which will increase the healthy order book visibility going forward. Currently, the company is engaged in several indigenous programs such as LCA, the HAL Dhruv, LUH and the BrahMos missile program, the Dharashakti program, etc.
- **View and valuation:** DPL is poised to benefit from the ongoing India defense capex cycle which is expected to grow at a high single-digit pace over the next 4-5 years. DPL is closely associated with various defense stakeholder like DRDO, ISR, MoD, LDRE, BEL, HAL, etc. We believe DPL to witness a high growth phase trajectory over the next 3-4 years led by 1)Exploring new opportunities in the export market; 2) working in collaboration with domestic players; 3) expecting to participate in Rs20-30bn worth of contracts over 3-4 years. 4) new product development in Radar, EW, Communication, and satellite) and 5) doubling the capacity. We initiate coverage on DPL with the TP of Rs.2174 (38xFY26E EPS). Recommend NEUTRAL rating.

CMP (Rs)	**2110**
Target Price (Rs)	**2174**
Potential Upside (%)	**3.0**

Company Info

BB Code	DATAPATT:IN EQUITY
ISIN	ISININE0IX101010
Face Value (Rs.)	2.0
52 Week High (Rs.)	2251
52 Week Low (Rs.)	723
Mkt Cap (Rs bn.)	112.5
Mkt Cap ($ bn.)	1.4
Shares o/s (Mn.)/Free Float (%)	55.9/2.4
FY23 EPS (Rs)	22.1
EPS FY26E (Rs)	57

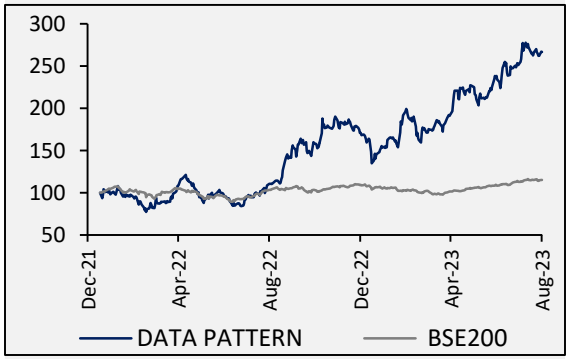
Shareholding Pattern (%)

	Jun-23	Mar-23	Dec-22
Promoters	42.41	42.41	45.76
FII's	5.32	5.08	2.30
DII's	11.11	11.64	7.90
Public	41.15	40.88	44.03

Relative Performance (%)

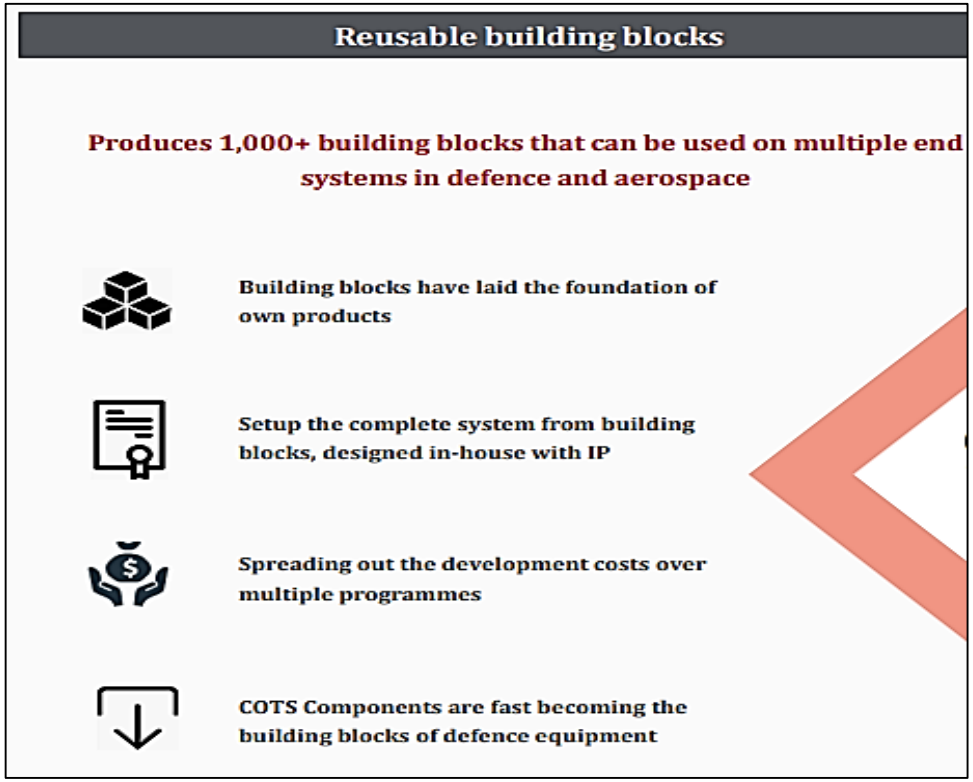
YTD	20M	18M	12M
Data Pattern	172.3	171.9	171.4
BSE 200	15.1	11.3	17.1

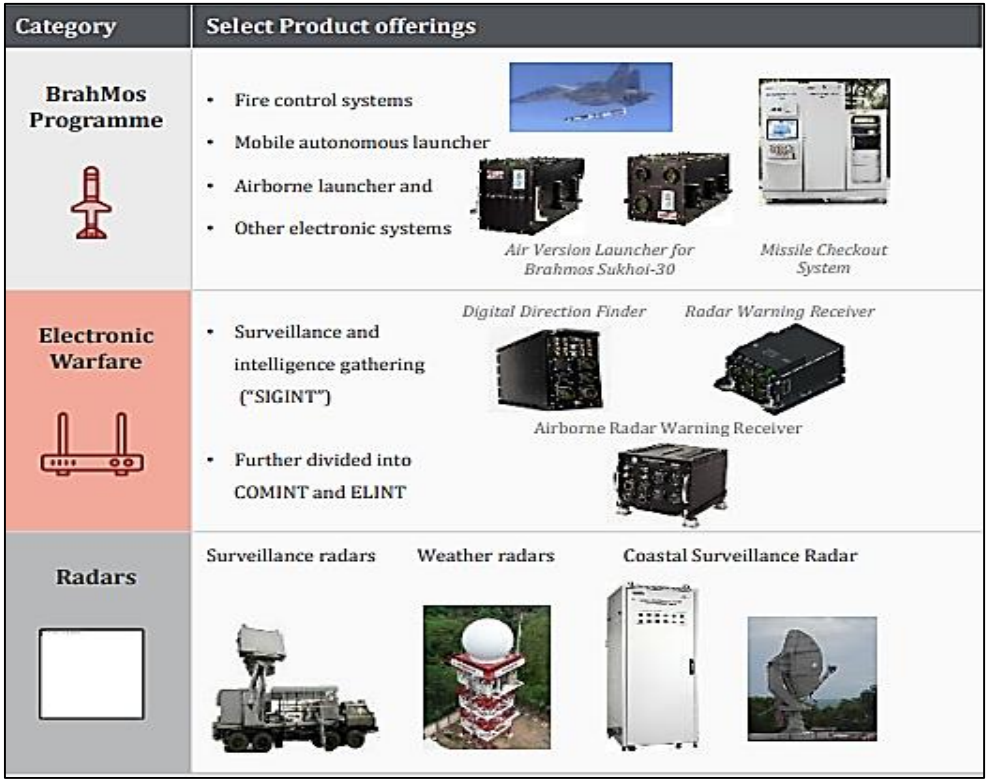
Rebased Price Performance



Product portfolio to expand by utilizing building block:

- Over the past thirty years, DPL has gained extensive experience in the defense industry and stands out as one of the few truly vertically integrated end-to-end operators in the Indian defense sector. With a proven track record as a reliable supplier of defense primes in Europe and the Asia Pacific region, DPL's products consistently surpass quality standards and exceed expectations.
- With a particular focus on Commercial Off-The-Shelf (COTS) solutions, the company produces a wide range of over 1000 building blocks that are adaptable for multiple end systems in defense and space applications. DPL covers the entire spectrum of defense electronics, positioning itself effectively to participate in various land, airborne, and naval defense programs in India.
- Notably, DPL has successfully developed products utilizing these versatile building blocks for a range of prestigious projects, including the LCA (Light Combat Aircraft), the LUH (Light Utility Helicopter), BrahMos' missile program (comprising land and air-based missile launch systems), automatic test equipment, tracking radars, weather radars, and nanosatellites for the Indian government's space organization. Additionally, DPL has contributed to DRDO's radars and Electronic Warfare systems, onboard equipment for different aircraft, missiles, and torpedoes, as well as Airborne Early Warning and Control Systems (AWACS).
- In summary, DPL's vast experience, commitment to quality, and broad array of cutting-edge products make it well-prepared to actively participate in and contribute to India's defense advancements across various domains.





Source: Company, CEBPL

Expanding the manufacturing facility:

- The company has recently raised Rs. 500 crores through a Qualified Institutional Placement (QIP) with the purpose of working on its next generation of products in the areas of radars, electronic warfare, communications, and satellites. As part of its expansion efforts, the company has established a new EMI-EMC Testing Facility at SITCOM in Bengaluru. The funds raised will be utilized for product development, fulfilling working capital requirements, and other purposes.
- The new EMI-EMC Testing Facility boasts increased capacity and capabilities, including handling large and heavy equipment, integrating large radars and mobile electronic warfare systems, and offering satellite integration services. The facility has been operational since March 2023. With this new setup, DPL is expected to handle large orders efficiently in the upcoming years and can now provide complete system solutions, rather than just being a subsystem supplier. This development positions the company to cater to a broader market and further enhances its potential for peak revenue, estimated at Rs. 10 billion.

Expansion

- Large Systems Integration Hangar
- Complete Radar Integration
- Electronic Warfare Vehicle Integration
- Additional Test Facility
- Augmented Environmental Test Infrastructure

Existing Facility Enhancement

- Augmented Design & Development Facility
- Additional Space For Design and Development Resources
- Clean Room for Satellite Integration
- Additional EMS Line
- Multi Ton material handling

EMS Line

Multizone Reflow Oven

X ray inspection system

Source: Company, CEBPL

Engaged in defence modernization programmes to support healthy revenue visibility:

- DPL is actively involved in various defense modernization programs that are expected to experience high growth over the next 4-5 years. The Ministry of Defense (MoD) is introducing several modernization initiatives to upgrade the armed forces, encompassing diverse requirements such as Communication Systems, Smart Radios, Information Dominance (electromagnetic spectrum), Electronic Warfare, Nano-Technology/MEMS, Miniaturization, Electro-Magnetic Pulse (EMP) Weapons, Adaptive Warheads, Weapon Guidance, and Space-Based Radars.
- We believe that the ongoing modernization efforts will offer significant opportunities for companies like DPL to capitalize on. The continuous advancements in these areas provide a long runway for DPL to reap substantial benefits.

Below are the few of technological requirements of TRI arm forces

AVIATION

- **Fighter Aircraft.-** The newer multi-role combat aircraft will replace the present fleet in future. Future combat fleet will therefore be a mix of upgraded aircraft and high technology modern combat aircraft with swing role capability
- **Transport Aircraft-** newer generation medium lift aircraft are required to bolster the transport capability and fill the void between LTA and HETAC
- **Heavy Lift Helicopters.-**
- **UAVs-** induction of High / Medium Altitude Long Endurance UAVs and ship based VTOL UAVs

MARITIME

- **AirLaunched ASW Launched ASW Launched ASWWeapons Weapons:**
  - Advancement of super-cavitating air-launched underwater weapons, encompassing high-speed torpedoes with extended ranges.
  - Design and development of air-launched torpedoes with ranges surpassing 15 Km.
  - Creation of intelligent air-launched torpedoes equipped with loiter and self-detection capabilities.
  - Integration of Unmanned Aerial Vehicles (UAVs) with precision-guided ammunition and missiles for weaponization.
- **Special Ops and Diving**
  - Special purpose craft, RHIBs, vehicles and other associated systems for Special Operation teams
  - IR/Thermal and Optical sights for observation and assault, sniper area weapons etc.
- **Diving**
  - Mine Counter Measures and Explosive Ordnance Disposal related equipment.
  - Equipment for conduct of underwater salvage operations.

LAND WARFARE

- Improve the operational effectiveness of armored and mechanized infantry fighting platforms, prioritizing maneuverability, lethality, survivability, and information dominance.
- Establish a comprehensive fire power and fire support system centered on long-range artillery, rockets, and missiles with high lethality, precision, and mobility.
- Enhance night fighting capabilities by providing state-of-the-art night vision devices.
- Achieve optimal sensor-to-shooter synergy by integrating sensors with the available firepower resources of the force.
- Develop a robust air defense capability utilizing modern radar systems, advanced seekers, and guidance-based surface-to-air missiles, gun systems, and ammunition with advanced hit efficiencies.
- Enable the deployment of wired and net-connected infantry soldiers integrated with a battlefield management system and equipped with state-of-the-art weapons.

Aero Space/Satelite

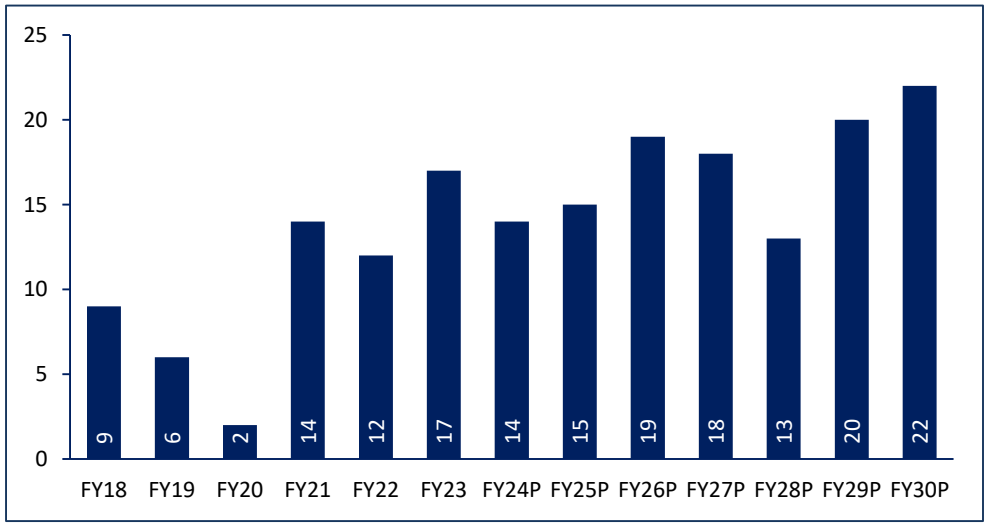
- **Use of Ka Band:** To provide larger bandwidths, increase total capacity per satellite, and result in power and cost reduction of ground stations.
- **On-Board Processing (OBP) Techniques Board Processing (OBP) Techniques:** Steerable beams to provide communication in less frequented areas. High bandwidth, polar micro communication satellite network, cryptography, data compression and satellite cross links.
- **LEO/MEO Satellite System:** To reduce propagation delay associated with geo-stationary satellites, lower orbit satellite system similar to the commercial system like Globe Star and Teledesic.

Source: Company, CEBPL

Opportunity in space technology:

- The demand for lightweight satellite solutions is experiencing significant growth, mainly driven by the emergence of multiple planned satellite constellations and the adoption of an easy plug-and-play approach for assembling CubeSats. Additionally, the utilization of Commercial Off-The-Shelf (COTS) components in low-weight satellites, particularly in Pico, Nano, and Microsatellites, has further contributed to this trend.
- DPL's expertise in building essential components such as onboard computers, Li-ion batteries, electric power systems, power distribution modules, power distribution expanders, and transmitters for nanosatellite manufacturing positions the company to seize the upcoming opportunities in the space sector. As the trend for light satellite solutions continues to rise, especially with the proliferation of satellite constellations and CubeSat integration, DPL is well-positioned to cater to the increasing demand in this dynamic market

Indian Satellite Manufacturing Forecast (Units; No. of Satellites)

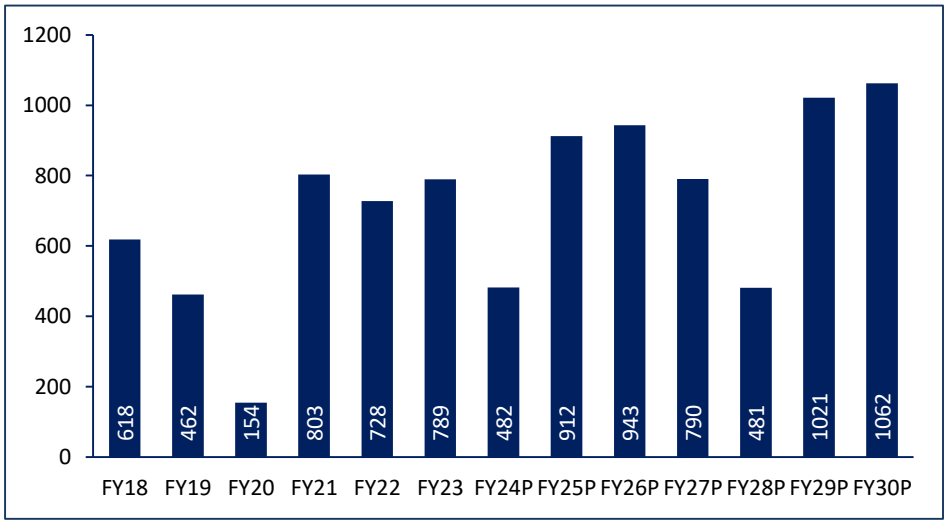


Source: Company, CEBPL

- Over the past two years, there has been a historical decline in revenue for satellite manufacturing, mainly due to a significant decrease in the number of satellites launched, amounting to a reduction of 77.3%. According to Frost & Sullivan's estimates, the Indian satellite manufacturing revenues reached $803.26 Million in 2021 and are projected to grow to $1061.5 Million by 2030, at a Compound Annual Growth Rate (CAGR) of 3.15%.
- In the Indian market, the 0-75Kg 170 segment is currently valued at $0.95 Million as of 2021, and it is anticipated to expand to $3.39 Million by 2030, exhibiting a robust CAGR of 15.18%.

Source: Company, CEBPL

Indian Satellite Mfg Revenue Forecast CY 2021-2030- $ US Mn.



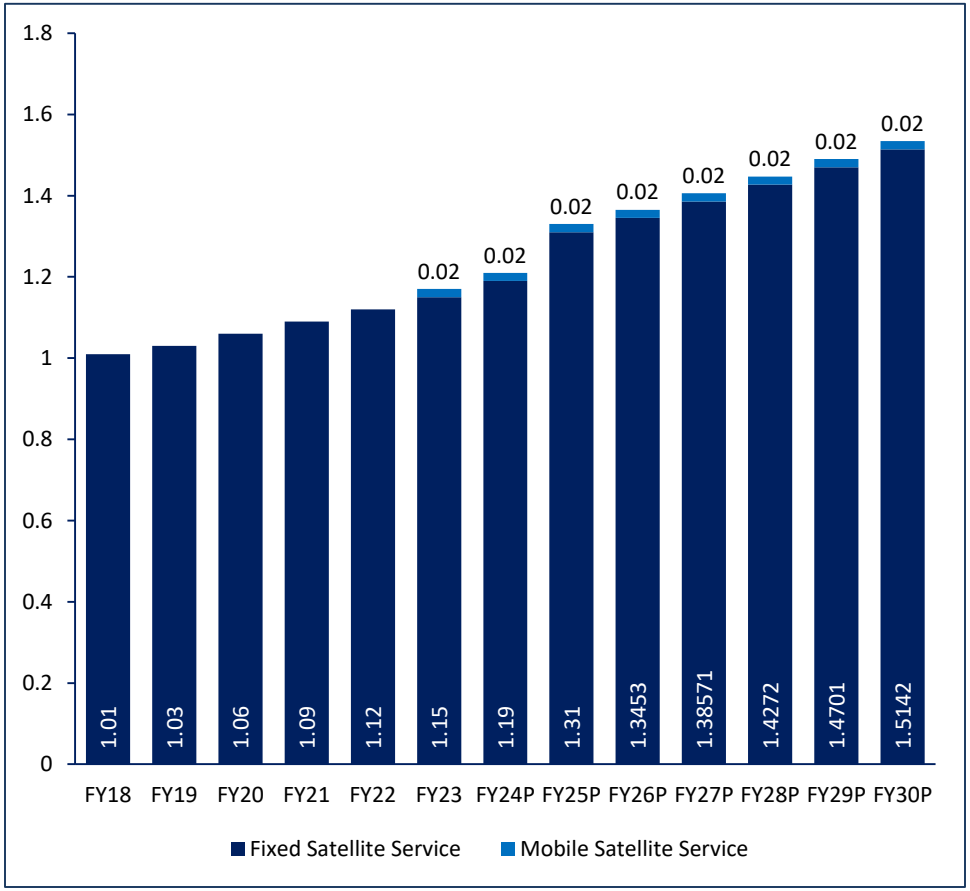
Source: Company, CEBPL

The Indian market's demand for satellite manufacturing is primarily fueled by the civil government and commercial sectors, holding market shares of 88.70% and 11.29% respectively. Key applications in this sector encompass IoT/M2M and Technology and Communication. For IoT/M2M applications, the demand is entirely driven by commercial players. On the other hand, for Technology applications, the demand is primarily led by the civil government, with a dominant market share of 99.92%.

Opportunity in space technology:-Ground station

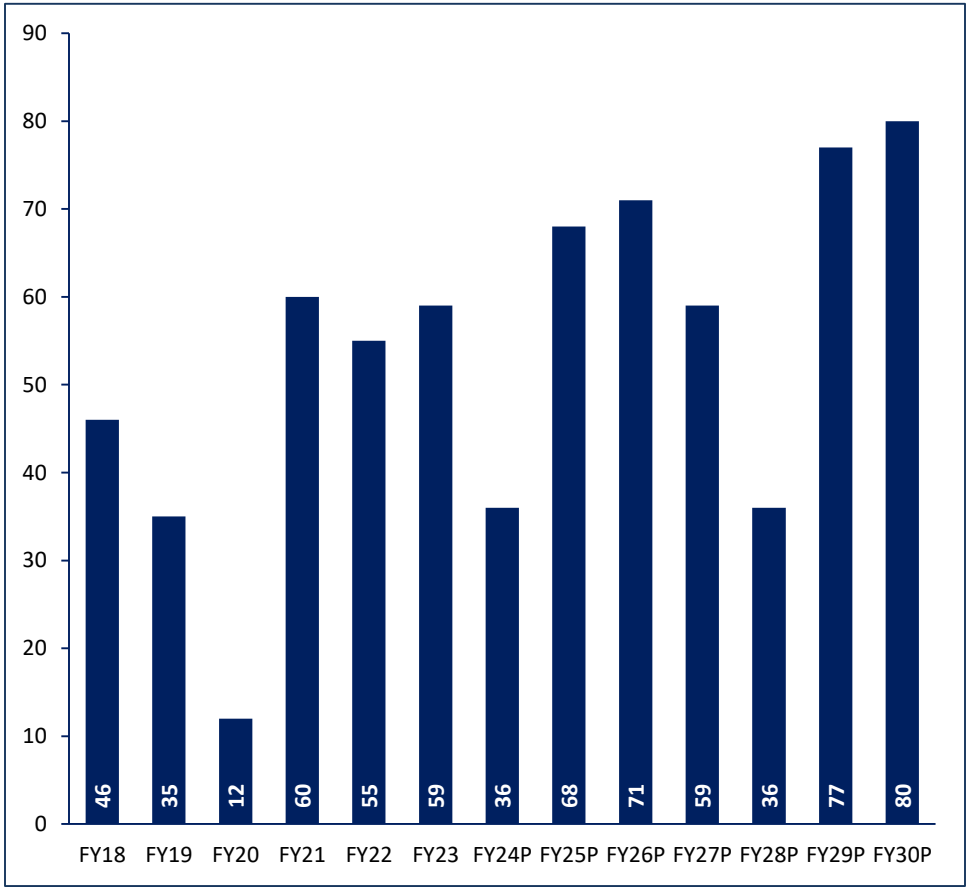
- The demand for ground stations in India is primarily driven by ISRO, which requires further establishment of ground stations to accommodate the growing number of launches. Additionally, the demand for ground station equipment in India is also influenced by satellite operators planning to offer services in the country through their satellite constellations. For instance, Bharti Enterprises intends to build ground stations across different regions of India to provide connectivity services domestically using the OneWeb constellation.
- The opportunity for Indian Ground Station equipment has been steadily growing, with the market increasing from $1.01 Million in 2018 to $1.06 Million in 2020, representing a Compound Annual Growth Rate (CAGR) of 2.45%. The market size is projected to reach about $1.09 Million in 2021 and further expand to $1.54 Million by 2030, with a CAGR of 3.91%. In the short term, the opportunity is mainly driven by FSS (Fixed Satellite Service) equipment.

Indian Ground Station Equipment Forecast (CY 2021-2030) $ US Mn.



Source: Company, CEBPL

Indian Testing Equipment Revenue Forecast (CY 2021-2030) $ US Mn.

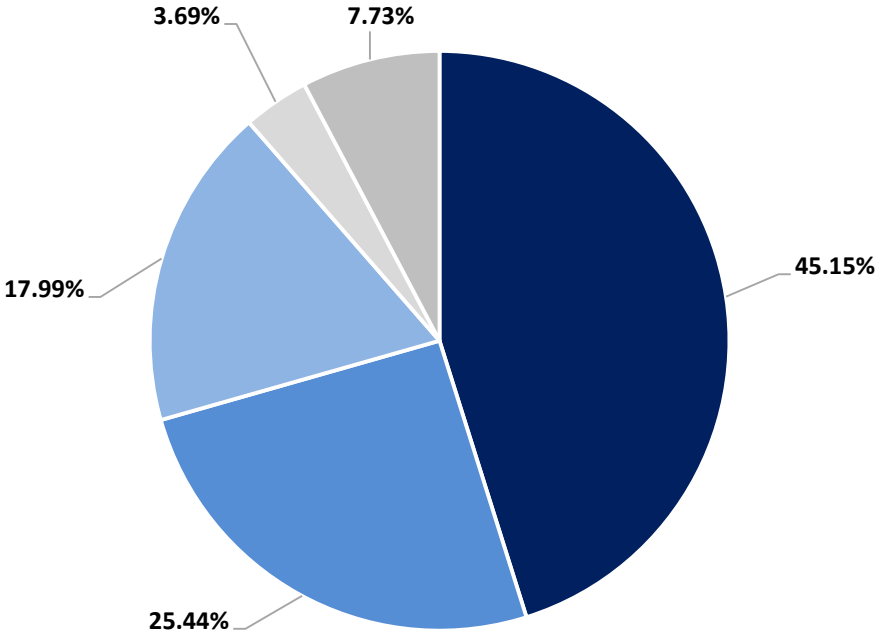


Source: Company, CEBPL

Opportunity in space technology:-lightweight satellite solutions

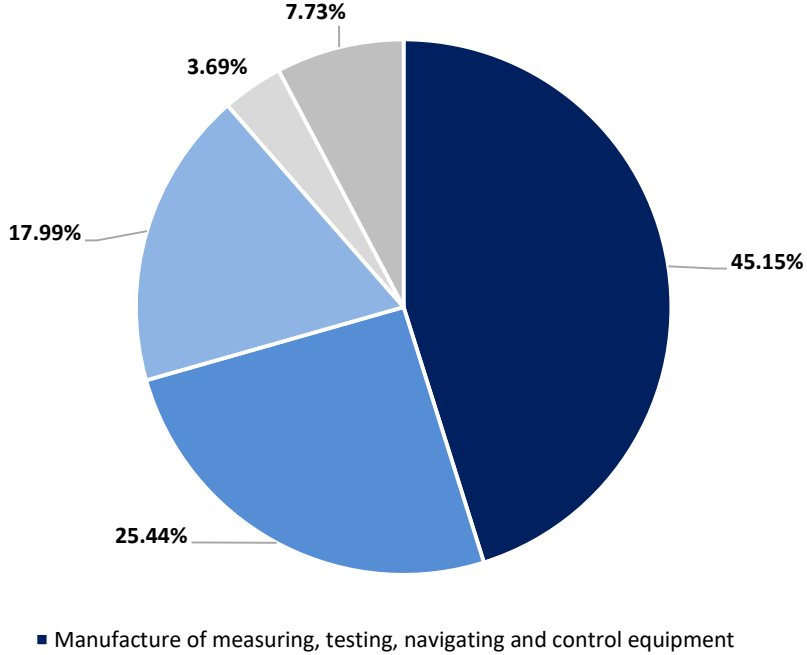
- The demand for lightweight satellite solutions is experiencing significant growth, mainly driven by the emergence of multiple planned satellite constellations and the adoption of an easy plug-and-play approach for assembling CubeSats. Additionally, the utilization of Commercial Off-The-Shelf (COTS) components in low-weight satellites, particularly in Pico, Nano, and Microsatellites, has further contributed to this trend.
- DPL's expertise in building essential components such as onboard computers, Li-ion batteries, electric power systems, power distribution modules, power distribution expanders, and transmitters for nanosatellite manufacturing positions the company to seize the upcoming opportunities in the space sector. As the trend for light satellite solutions continues to rise, especially with the proliferation of satellite constellations and CubeSat integration, DPL is well-positioned to cater to the increasing demand in this dynamic market.

Products/Services sold by the entity



Source: Company, CEBPL

Details of Business Activity

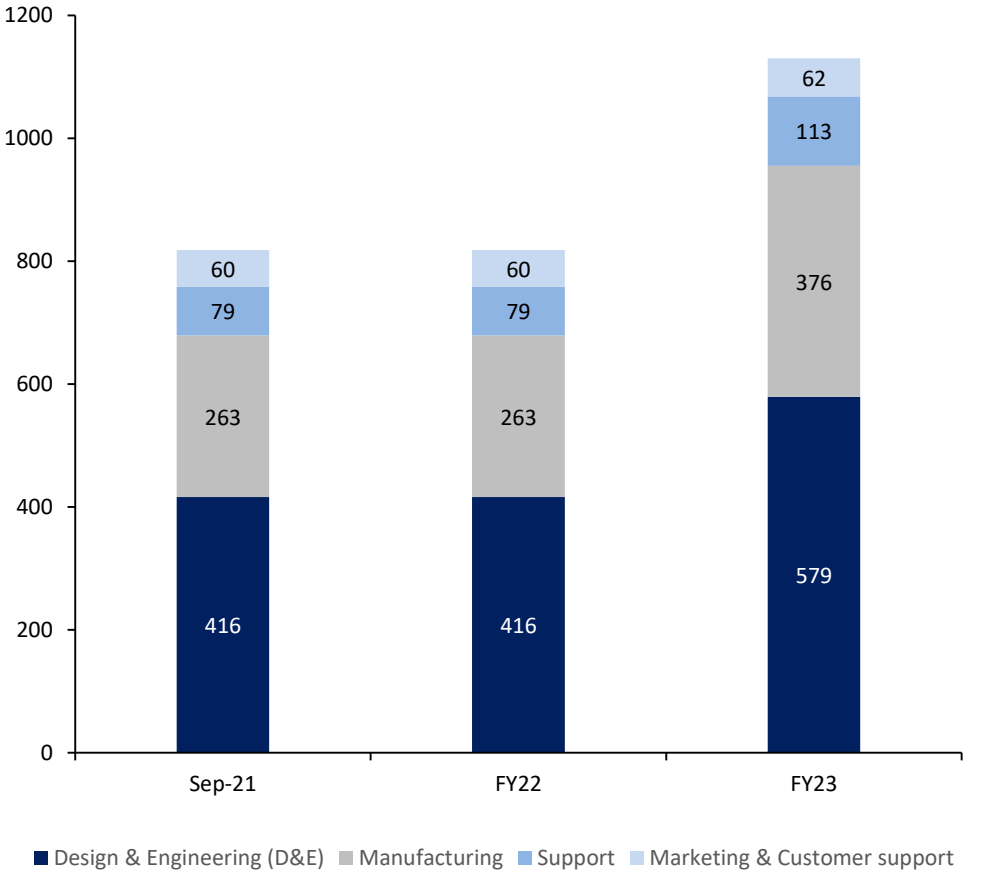


Source: Company, CEBPL

Skill highly experienced management team:

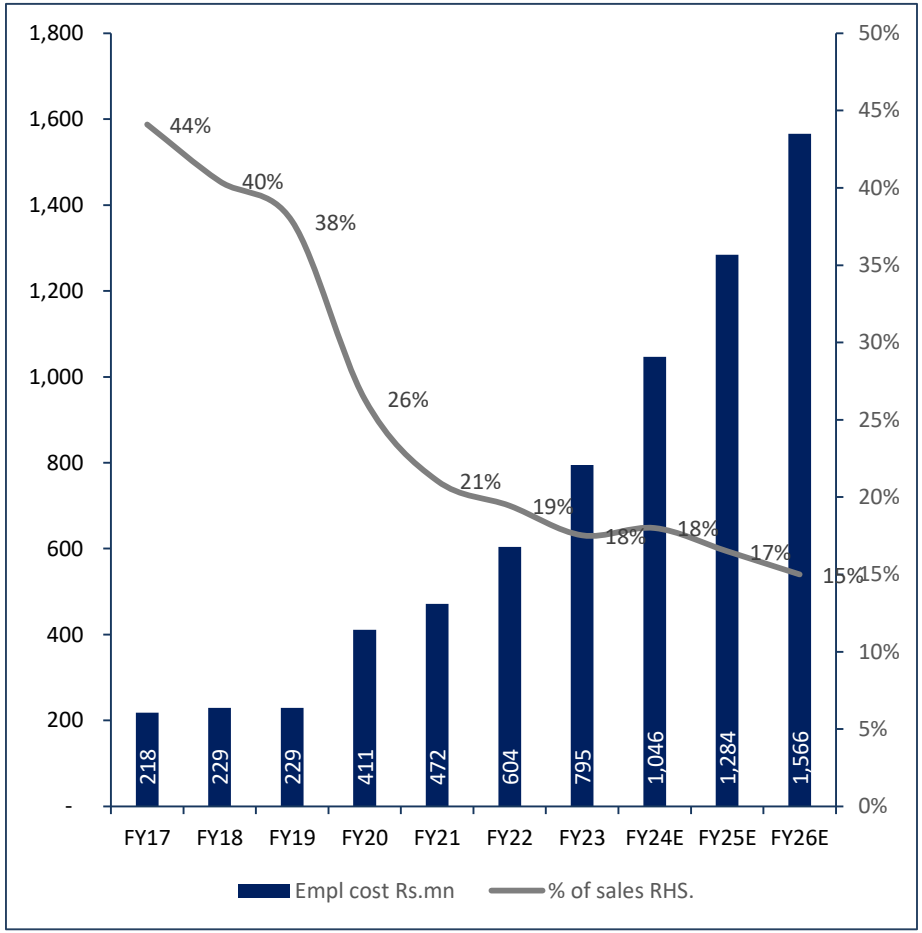
- DPL boasts an experienced management team with extensive backgrounds in the defense sector. Mr. Srinivasagopalan Rangarajan, the Chairman and Managing Director, along with Mrs. Rekha Murthy Rangarajan, the Promoter and Director, have been associated with the defense and aerospace electronics industry for over three decades. Additionally, most of the management team members have been part of DPL for more than two decades, showcasing their longstanding commitment and expertise.
- Among the 1130 employees, the company can proudly count on more than 700 qualified engineers. To meet the rising demand from local manufacturing, DPL plans to add 100 more engineers in the near future. This strategic move aligns with the company's vision to further strengthen its workforce and efficiently cater to the increasing demands of the market.

Department wise Employees



Source: Company, CEBPL

Emp. Cost % sales



Source: Company, CEBPL

Product Capability Comparison of Major Indian Defence Stakeholders

Company	Radars-Tracking & Surveillance	Radars-Multimission	Radars-Specialized (Stelth Detection Etc.)	Seekers & Electronics for Missile/Torpedoes/Sonbuoys	EW	Communication SDR	Satcom	Ground Stations	Fire Control Systems	Avionics	Nano & Micro Satellites	Testing
Data Patterns												
L&T (Defence Engineering revenues)												
BEL												
Paras Defence												
Mahindra Defence Systems												
Tata												
Astra Microwave Products												
Godrej&Boyce												
Centum Electronics												
Alpha Design Technologies												
Adani Aerospace & Defence Ltd.												
CoreEI Technologies												
Mistral Solutions												

Source: Company, CEBPL

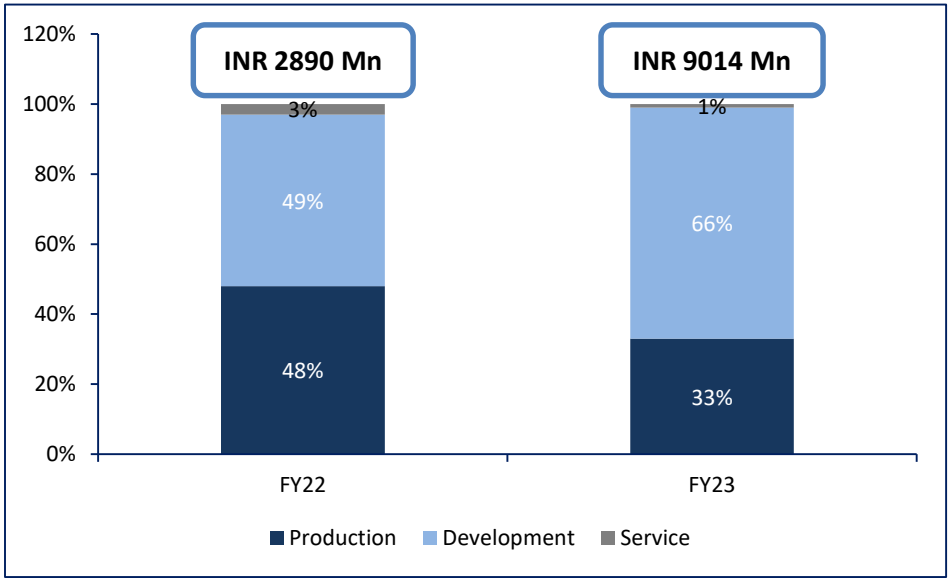
Strong Capability- Products & Components	
Medium Capability- Mostly Components/Subsystem	
No Capability	

Source: Company, CEBPL

Data Patterns has 100% in house design, development and manufacturing capabilities across the segments which is shown above. The company has over 30 years of experience in the industry and is among the few truly vertically integrated end-to-end operators in the Indian defense industry.

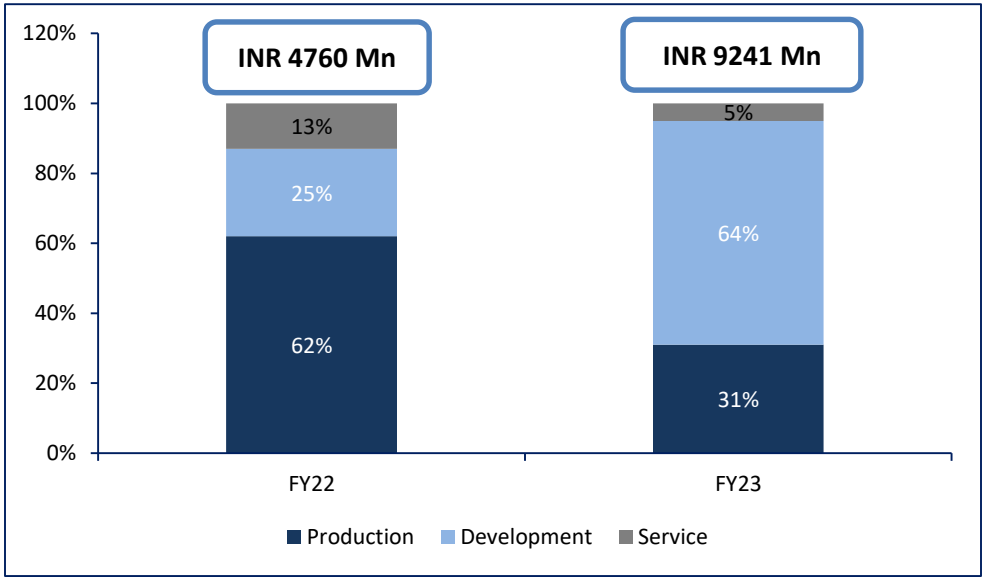
Story in charts

Order Book



Source: Company, CEBPL

Revenue Mix



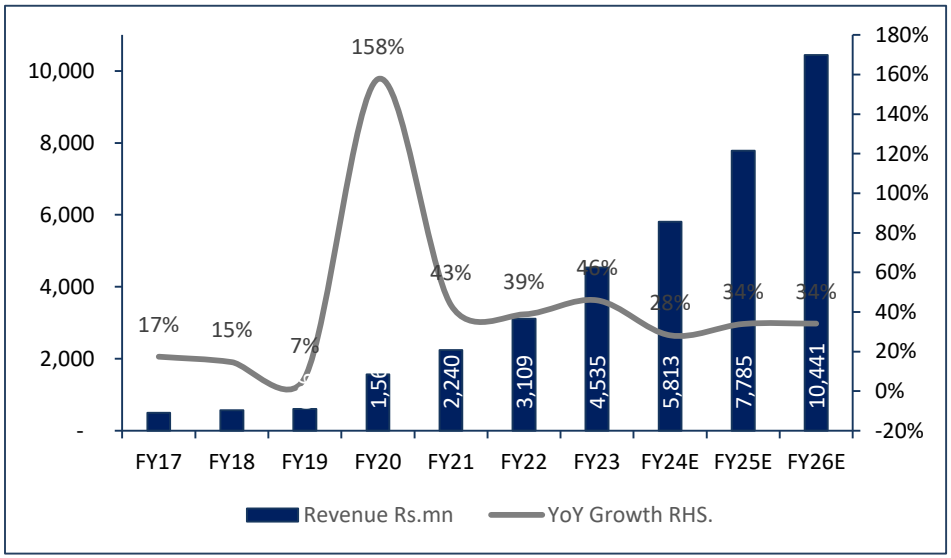
Source: Company, CEBPL

Major order received in FY23 INR Mn

Source: Company, CEBPL

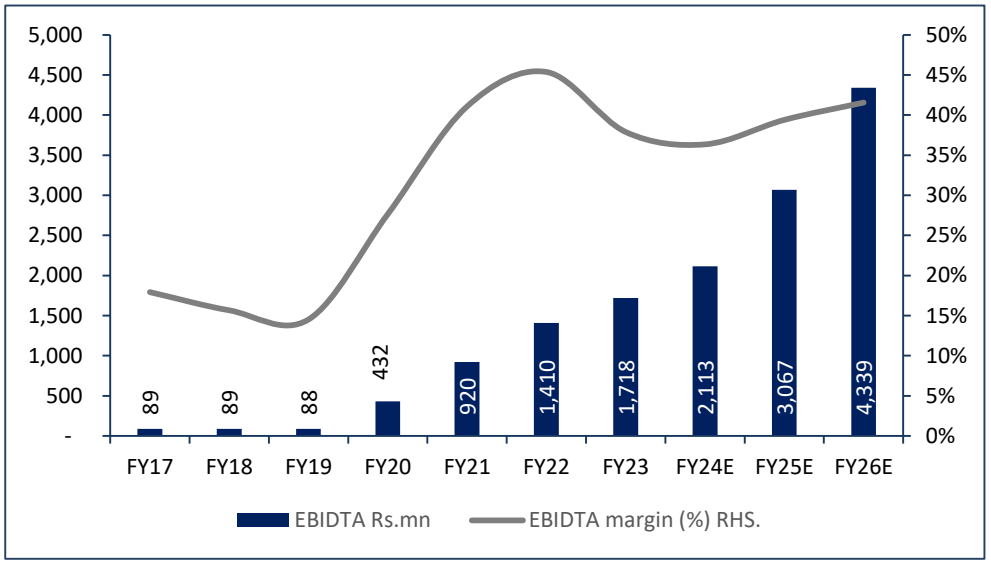
Story's in charts

Revenue to grow led by strong order book



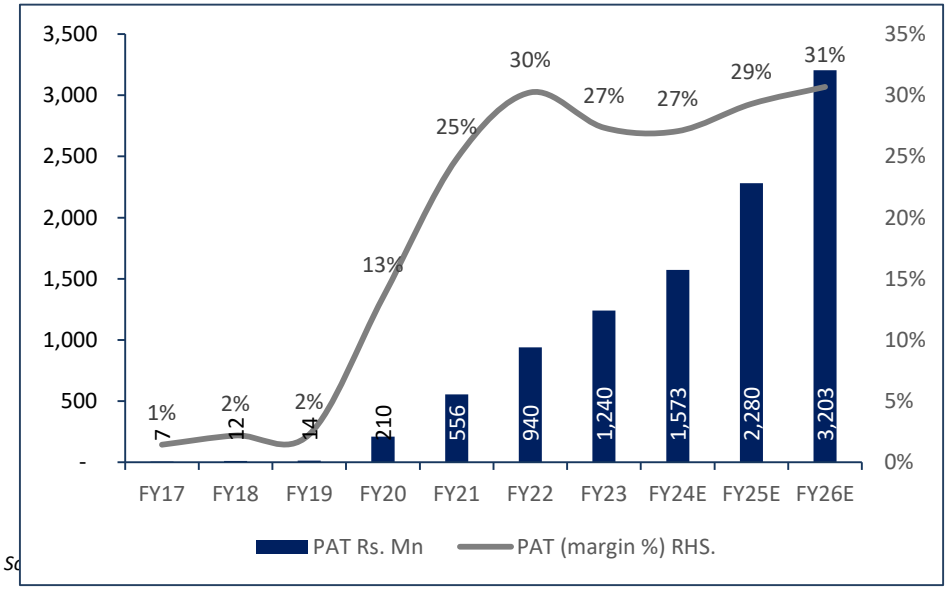
Source: Company, CEBPL

EBITDA Margins Trend

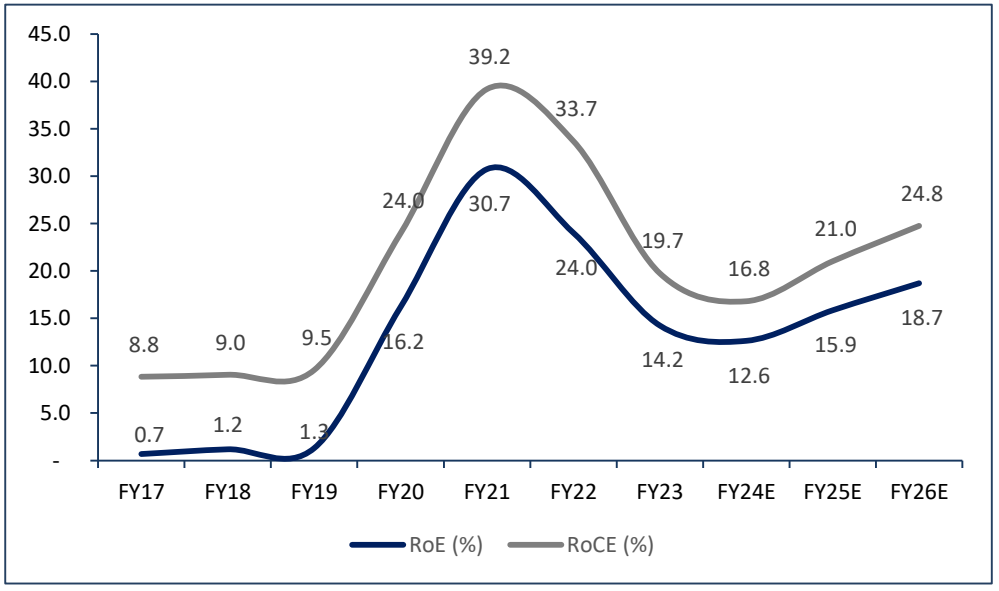


Source: Company, CEBPL

PAT (Rs. Mn.) and YoY (%) growth



RoE and RoCE trend



Key Management Personnel's.

Name and Designation	Brief description
Shri. Srinivasagopalan Rangarajan Chairman and Managing Director	Shri Mr. Srinivasagopalan Rangarajan, Chairman and Managing Director, has over three decades of experience in business development, corporate affairs, finance, and marketing. With a Bachelor's Degree in Chemical Engineering and a Master's in Science, he has received numerous awards, including the Project Leader Award and the Professional Excellence Award at the Corporate Governance Summit.
Smt. Rekha Murthy Rangarajan Director	Shri Smt. Rekha Murthy Rangarajan is the Whole-time Director of our Company, with a Bachelor's Degree in Economics, English, and Psychology from Bangalore University and a Master's Degree in Applied Psychology from Madras University. With over two decades of experience, she has previously worked at Sterling Computers Limited.
Shri Mr. Vijay Ananth Chief Operating Officer and Chief Information Security Officer	Shri Mr. Vijay Ananth, 45, is the Chief Operating Officer and Chief Information Security Officer of our company. With a bachelor's degree in computer science from Manonmaniam Sundaranar University and a master's degree in computer applications from the University of Madras, he has over two decades of experience in software engineering and product management. Ananth joined our Erstwhile Subsidiary in 1998 and has held various positions, including Chief Operating Officer since 2016. He was appointed as Additional Director in February 2022 and regularized as a Whole-time Director in May 2022.
Shri Mr.Desinguraja Parthasarthy Chief Technical Officer	Shri Mr. Desinguraja Parthasarthy, Chief Technical Officer, holds a bachelor's degree in engineering from University of Madras and 32 years of experience in product development. He joined Erstwhile Subsidiary in 1989, became General Manager-Technical in 2002, and holds the position till date.
Shri Mr.Venkata Subramanian Venkatachalam Chief Financial Officer	Shri Mr. Venkata Subramanian Venkatachalam, Chief Financial Officer with a commerce degree, He is a fellow member of the Institute of the Chartered Accountants of India. He joined the company in 2000 and has been promoted to General Manager-Finance in 2019.

Source: Company, CEBPL

SHAREHOLDING PATTERN

Names	Dec 2021	Mar 2022	Jun 2022	Sep 2022	Dec 2022	Mar 2023	Jun 2023
Promoters:	**45.62**	**45.62**	**45.62**	**45.76**	**45.76**	**42.41**	**42.41**
Rangarajan S	24.60	24.60	24.60		24.60		22.80
Shrinivasagopalan Rangarajan				24.60		22.80	
Rekha Murthy Rangarajan	20.39	20.39	20.39	20.53	20.53	19.02	19.02
Gowkadere Keshava Murthy	0.63	0.63	0.63	0.63	0.63	0.58	0.58
Vasundhara							
FIIs:	**1.27**	**1.48**	**1.43**	**1.60**	**2.30**	**5.08**	**5.32**
Abu dhabi investment authority-monsoon						1.90	1.92
DIIs:	**9.18**	**8.01**	**8.25**	**9.24**	**7.90**	**11.64**	**11.11**
Axis mutual mutual fund trustee limited	1.90	1.52	1.40	1.30	1.30	2.37	2.40
Tata AIA life insurance Co Ltd	1.43	1.43	1.43	1.56	1.55	2.25	2.27
Iifl focused equity fund		1.21	1.22	1.33	1.33	1.45	
Nippon life india trustee						1.19	1.19
360 One Focused Equity Fund							1.22
Public:	**43.93**	**44.89**	**44.70**	**43.40**	**44.03**	**40.88**	**41.15**
Florinetree capital partners llp	11.56	11.56	11.56	11.56		10.71	10.71
Design Rajan P	2.85	2.85	2.85	2.82	2.82	2.61	2.61
Vijay ananth k	2.80	2.80	2.80	2.80	2.80	2.60	2.60
Sundhara raghavan K	2.40	2.40	2.40	2.40	2.40	2.23	2.23
Laxmi shivanand mankekar	1.46	1.46	1.46	1.46	1.46	1.36	1.36
Subramanium tirunavukkarasu	1.33	1.33	1.33	1.33	1.33	1.24	1.24
V venkata Subramanian	1.24	1.24	1.24	1.20	1.20	1.11	1.08

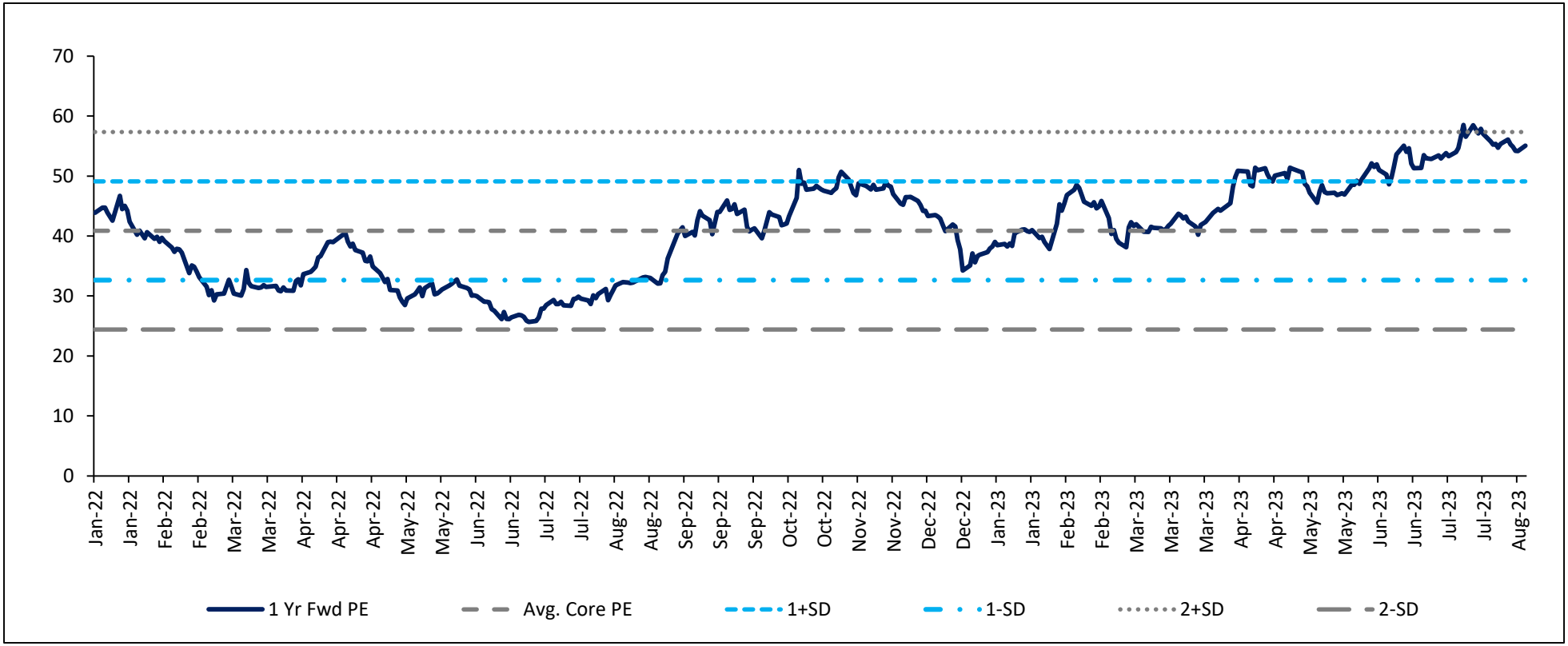
Source: Company, CEBPL

Key Milestone

Year	Description
2001	Designed a fire control system for research center imarat, designed and developed a launch pad countdown system for delivery to Indian government space organization
2007	Commencement of deliveries of BRAHMOS Missile system to the Indian army by Brahmos aerospace private limited
2009	Developed Seeking Automated test equipment for INS Shikra
2013	Designed a smart cockpit display system and developed a infrared guided missile tester
2014	Best industry award 2014 by BrahMos Aerospace private limited
2015	Designed and developed primary surveillance radar for coastal surveillance for Indian government space organization
2016	Made in India award by TiECON, Chennai
2016	Embedded design industry corporate silicon India and mentor graphics
2019	Most growth oriented company award by planMyTraining.com
2021	In dec 2021 listed in Ipo. Initiated expansion of manufacturing facility with doubling of available floor area

Source: Company, CEBPL

Data Patterns (India) Ltd PE (x) Band



Source: Company, CEBPL

Data Patterns (India) Ltd (INR mn)	FY22	FY23	FY24E	FY25E	FY26E
Income Statement					
Revenue	3,109	4,535	5,813	7,785	10,441
Gross profit	2,248	2,825	3,566	4,935	6,719
EBITDA	1,410	1,718	2,113	3,067	4,339
Depreciation	66	85	115	157	199
EBIT	1,344	1,634	1,998	2,910	4,140
Interest expense	110	77	-	-	-
Other Income	40	92	100	130	131
EO Items	-	-	-	-	-
PAT	940	1,240	1,573	2,280	3,203
Adjusted PAT	940	1,240	1,573	2,280	3,203
EPS	17	22	28	41	57
NOPAT	992	1,229	1,498	2,183	3,105
Balance Sheet					
Net worth	5,745	11,671	13,244	15,524	18,727
Minority Interest	-	-	-	-	-
Deferred tax	(8)	(3)	-	-	-
Total debt	63	-	50	100	150
Other liabilities & provisions	280	1,417	851	1,128	994
Total Net Worth & liabilities	**6,081**	**13,084**	**14,145**	**16,752**	**19,871**
Net Fixed Assets	475	1,120	1,305	1,749	2,150
Capital Work in progress	173	14	1,800	1,500	1,501
Investments	-	557	-	-	-
Cash & bank balance	1,771	5,445	2,777	3,811	3,434
Loans & Advances & other assets	1,213	861	1,918	2,647	3,445
Net Current Assets	4,220	10,533	9,122	10,857	12,775
Total Assets	**6,081**	**13,084**	**14,145**	**16,752**	**19,871**
Capital Employed	5,809	11,671	13,294	15,624	18,877
Invested Capital	4,038	6,228	10,518	11,813	15,444
Net Debt	(1,707)	(5,445)	(2,727)	(3,711)	(3,284)
FCFF	81	(498)	30	1,007	375
Cash Flows					
Cash flows from Operations	463	(103)	330	1,607	976
Capex	(382)	(395)	(300)	(600)	(601)
FCF	81	(498)	30	1,007	375
Cash flows from Investing	(1,179)	(3,832)	(300)	(600)	(601)
Cash flows from Financing	2,359	4,381	50	50	50

Source: Company, CEBPL

Data Patterns (India) Ltd	FY22	FY23	FY24E	FY25E	FY26E
Growth Ratios					
Revenue (%)	38.8	45.9	28.2	33.9	34.1
EBITDA (%)	53.3	21.8	23.0	45.2	41.5
PAT (%)	69.1	32.0	26.9	44.9	40.5
Margin ratios					
EBITDA margins (%)	45.4	37.9	36.3	39.4	41.6
PAT Margins (%)	30.2	27.3	27.1	29.3	30.7
Performance ratios					
OCF/EBITDA	0.3	(0.1)	0.2	0.5	0.2
OCF/IC	11.5	(1.6)	3.1	13.6	6.3
RoE (%)	16.4	10.6	11.9	14.7	17.1
ROCE (%)	23.1	14.0	15.0	18.6	21.9
Turnover Ratio (Days)					
Inventory	141	155	160	140	141
Debtors	233	308	300	250	251
Payables	45	35	43	42	43
Cash Conversion Cycle	288	409	398	330	327
Financial Stability ratios					
Net debt to Equity (x)	(0.3)	(0.5)	(0.2)	(0.2)	(0.2)
Net debt to EBITDA (x)	(1.2)	(3.2)	(1.3)	(1.2)	(0.8)
Interest Cover(x)	12.2	21.1	N/A	N/A	N/A
Valuation metrics					
Fully diluted shares (mn)	56	56	56	56	56
Price (INR)	2110	2110	2110	2110	2110
Market Cap (INR mn)	1,18,126	1,18,126	1,18,126	1,18,126	1,18,126
PE(x)	126	95	75	52	37
EV (INR mn)	1,16,419	1,12,681	1,15,400	1,14,415	1,14,843
EV/EBITDA (x)	83	66	55	37	26
Book Value (INR/share)	103	208	237	277	335
Price to BV (x)	20.6	10.1	8.9	7.6	6.3
EV/OCF (x)	252	-1,099	349	71	118

Source: Company, CEBPL

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