CAPACITY DEVELOPMENT

"If I have the belief that I can do it, I shall surely acquire the capacity to do it even if I may not have it in the beginning" **By Mahatma Gandhi**

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Abstract

The Vision of 'Make in India' is to achieve self-reliance through building indigenous capabilities for manufacturing and maintenance of defence equipment in a cost effective manner. Industries are partners of the Armed Forces, stakeholders in meeting India's security threats. The industry, being a vital stakeholder as well as a key enabler in this national security paradigm needs to play a greater role in capacity building for meeting the challenges to our security. Hence, there is a need for indigenously developed and reliably produced weapons, ammunition and equipment 'Cost effective, innovative solutions' .

Whereas there is a need for regular evaluation of the effectiveness of policies and procedures at the level of the Ministry of Defence and the government, there is so much more that can be done at the level of the Services. The Army, being the largest service and fielding the largest array of equipment, needs to improve its own processes by carrying out an internal analysis and taking effective steps to speed up the procurement processes.

The growing domestic market offers opportunities both to foreign and Indian players with a shift from Buyer-Seller relationship to one of partnership to jointly develop a product. The impact of the new initiatives, prioritization of acquisition categories and the production policy will enable Indian industries to acquire technology, foster joint venture and collaboration with foreign OEMs and manufacture the product in India. Such an initiatives can indeed create economic value, by adoption of a proper approach and selecting partners with right capabilities.

Key words: Capacity Development, Defence, Retention

INTERNAL CHALLENGES IN CAPABILITY BUILDING AND RETENTION

It is no secret that the million plus strong Army, facing two known adversaries who pose serious security challenges individually and potentially in tandem, has been facing numerous hindrances, in its capability building to meet the prevailing security threats. The common force management challenges facing the three services involves following:

(a) Glaring deficiencies in infrastructure, especially along the Northern border regions,

(b) Reorientation of training to achieve realism and seamless tri-service synergy.

(c) The shortfall in planned force structure due to delays in the induction of required weapon systems and equipment,

(d) Shortage of officers, efficient use of available human resource.

(e) Slow pace of modernisation through upgradation of existing equipment.

Some of these challenges can only be met through all-of-government initiatives but others can be addressed at the level of the Services. Being comparatively smaller in number and with smaller ranges of major equipment, the Air Force and Navy today are better structured and better geared to achieve the targets of force development in the medium to long term. The Army, on the other hand, has been facing major challenges even in capability retention due to chronic shortage of very basic requirement such as ammunition and fuses. Military capability, particularly the army's capability, is seriously affected by delays in procurement, inadequate attention to the serviceability state of the equipment and organizational constraints.

Understanding Military Capability. Perhaps there is inadequate understanding among our planners about a viable force structure. Various elements have been highlighted to better understand military capability:

(a) **Equipment Serviceability**. The first element of a viable force is that whether the weapon systems and equipment currently held is adequate in terms of quantity, is fully serviceable, and is backed by the adequate supply of expendables and essentials to sustain capability. Whereas delay in induction of new frontline equipment is often highlighted, the serviceability of existing equipment is not being paid adequate attention. A near 100 per cent equipment serviceability will provide confidence to the users; therefore greater attention needs to be paid to this aspect. Prudent short term planning and timely action by stakeholders can easily take care of this most important aspect.

(b) **Periodic Upgradation**. The second element involves periodical upgradation of existing equipment to handle the current challenges and wholesomely meeting the requirement of any planned accretion of forces. This will ensure that what we hold is current and matches what our adversaries possess. This element can effectively be taken care of through prudent medium term planning.

(c) **Futuristic Outlook**. The third but equally important element is the continuous modernization of the force by gradual induction of latest equipment for giving a futuristic outlook to the forces. At least 25 per cent of our major weapon systems and equipment needs to be the best in the class available anywhere. This is a function of long term planning and drawing up a clear road map for implementation. In actual sense, none of the three processes is isolated and should run concurrently.

Challenges. As India aspires for great power status and a major role in global affairs, military capability needs greater focus than what it has been receiving in the years since independence. Procurement challenges affecting defence preparedness can be discussed under two broad categories; intrinsic and organisational.

(a) **Intrinsic challenges**. Intrinsic challenges comprise the foundational issues which are beyond the Government and organizational control and have become deep rooted due to half-hearted approach and years of indifference in addressing the fundamental aspects having a bearing on self-sufficiency.

(b) **Organizational challenges**. Organizational challenges are mostly those which are well known but there is little or inadequate attempt to address them entirely due to unrelated considerations. There are a large number of issues, if handled imaginatively, can significantly bring down the procurement delays and enhance self-reliance, thereby ensuring improved capacity building and retention. Organisational challenges in turn fall under two categories, viz, higher level decision making and the improvement of processes in procurement Higher Level Decision Making. A few interesting questions come to mind while analysing the higher level decision making on issues affecting India's defence.

(i) To begin with, Is the nation and the government fully aware of the state of defence preparedness and the shortcomings thereof? The answer is "Yes" and a number of studies ordered by the government from time to time like the Kargil Committee Report, the Kelkar and Rama Rao Committee Reports as well as the recent Naresh Chandra Task Force and the Government Task Force Report on Modernisation and Self Reliance had a purpose; to provide an insight into the issues affecting National Security and recommend measures for overcoming the challenges in concerned areas.

(ii) The second question that follows is, whether the findings and recommendations contained in these reports have been implemented? It can be said with certainty that a large number of the recommendations remain un-implemented or only partly implemented.

Adequacy and Training of Human Resource. Another area which needs clear emphasis is the adequacy and training of the human resource involved in procurement. Most of the officers involved in the process, civilian or military, have no prior experience or formal training to undertake or discharge the major responsibility entrusted to them. On-the-job training is inadequate to understand the complexities of defence trade and the internal policies. Lack of basic tools such as a well-equipped reference library denies officers the knowledge essential for conducting their business. Possibly, as an immediate measure, the government could look into organizing short capsules (10 to 30 days) and medium term courses (2 to 3 months duration) to facilitate understanding of the acquisition processes. The training can be appropriately reoriented through creation of a full-fledged Defence Acquisition Wing as part of some training institute. This wing will cater for training, research and evolving best practices for acquisition of defence equipment.

Involvement of a Large Number of Agencies. The involvement of a large number of agencies including the Cabinet Committee on Security, Defence Acquisition Council, Defence Procurement Board, Department of Defence Production, Ministry of Defence (MoD) Officials in Finance and Acquisition Wings, Headquarters Integrated Defence Staff and the three services, Ordnance Factory Board, DPSUs, DRDO, Directorate General Quality Assurance (DGQA) and many others makes coordination a very challenging task. This may be unavoidable but, as reported in the press from time to time, the questioning of the necessity of an acquisition by the Ministry of Finance after it has been approved by the Raksha Mantri is beyond comprehension. This needs to be streamlined with minimum involvement of large number of agencies and thus make it less time consuming.

The Blame Game and Responsibility Issues. While the MoD is often blamed for the state of affairs including marathon delays in projects, it should not be forgotten that the Army too has as much a role in the process. Without apportioning blame, it may be sufficient to state that if there was fair scrutiny then the Army would find enough reasons to streamline its own process and undertake organisational changes. A large number of procurements do not fructify due to procedural or technical flaws in the project processes directly handled by the Army. Even the surrender of funds, a recurring phenomenon, occurs when the Army is not able to spend the allotted funds in time. Last minute allotment/release of additional funds further aggravates the issue. Deep introspection would help in understanding the shortcomings better. The MoD on the other hand needs to expedite decision making and do away with its overcautious approach in handling procurement cases.

PRESENT STATE OF CAPACITY DEVELOPMENT FOR DEFENCE FORCES

Present state of capacity development of all Tri-services has been enumerated in succeeding paragraphs.

Indian Army. Various attributes towards capacity building by army has been mentioned below:

(a) The capacity & capability development plans of Indian Army remain dynamic/ flexible and are based upon the appreciated immediate & emerging national security challenges and in support of our operational response strategies. Accordingly, Indian Army is ensuring preparation & implementation of prioritized acquisition plans to maximize capacity & capability development, in consonance with the evolving threat perception.

(b) **Defence Planning Committee (DPC)**. The DPC under the chairmanship of National Security Advisor has been constituted in 2018 for facilitating Integrated Planning at the apex level and its focused execution to promote Strategic Planning, Capability Development, Defense Diplomacy and Indigenization in Defense Sector.

(c) **Appointment of CDS**. The appointment of the Chief of Defense Staff (CDS) and the creation of Department of Military Affairs (DMA), has resulted in far greater synergy with Ministry of Defense as also given the twin objectives of 'Integration/Jointness' and 'Resource Optimization' within the Services a much needed flip.

(d) **Long Term Modernization Planning**. Factoring the emerging/ futuristic security challenges, and in consonance with the 'CCS Mandate to CDS' for implementing the Integrated Capability Development Plan (ICDP), an Integrated Capability Development System (ICADS) has been initiated vide DAP 2020. The ICADS process will maximize resource optimization and infuse much needed jointness/integration in tri-services planning/ procurement process.

(e) **Army Design Bureau (ADB)**. The ADB, since its raising in 2017, has made major forays in supporting R&D/ harnessing technology with an extensive outreach to industry, academia and ushering a collaborative engagement with the technology providers, manufacturers and users.

(f) **Reorganization of IHQ of MoD (Army)**. The recent Reorganization of the Army HQ, creating a Deputy Chief for looking after both the Capability Development & Sustenance needs of the Indian Army, further empowers Indian Army to pursue a focused approach towards achieving the mandate of 'Atmanirbhar Bharat'.

(g) **Raising of Niche Capability Structures**. To address critical capability voids in the domains of space, Cyber and Special Forces Capabilities, Niche Capability Structures in terms of Defense Space Agency, Defense Cyber Agency & Armed Forces Special Operations Division have been raised in 2018-19.

(h) **Emergency Procurement Powers**. Emergency procurement Powers have been delegated to the Service Headquarters by the Government to address the emergent operational needs for effectively responding to the operational situation in Eastern Ladakh/ Northern Borders.

(j) **Defence Acquisition Procedure (DAP) 2020**. The new DAP 2020 has been promulgated in October 2020 as an enabling document that lays emphasis on indigenous production and self-reliance under the 'Atmanirbhar Bharat' initiative and further streamlines capital procurements for the Army.

(k) **Committee for Technical Modernization of Armed Forces**. To address long term technological capability needs of the Armed Forces, the Government has constituted a high level Committee, in October 2021, for recommending a Roadmap to achieve self-reliance and Technical Modernization of the Armed Forces. The Roadmap prepared by the committee is likely to facilitate the Armed Forces in retaining continued focus on acquiring niche/emerging/disruptive capabilities & technologies for addressing the evolving threats & challenges that may manifest in the foreseeable future.

Indian Navy. The modernization of Indian Navy is an ongoing process and aims to strengthen India's maritime security. The capability development/ modernization of the Indian Navy is being undertaken in accordance with the Long Term Integrated Perspective Plan (LTIPP). The ongoing modernization aims to create capabilities for accomplishing a range of missions across the entire spectrum of threats and challenges addressing rapidly shifting global and regional balances of power. Over 100 contracts have been concluded since 1st April, 2018 towards modernization of the Indian Navy. Most recent being induction of indigenously made Aircraft carrier INS Vikrant and nuclear powered submarines thus shifting from diesel/electric powered submarines.

Indian Air Force. To meet emerging challenges, the Indian Air Force (IAF) is progressing well on a capability driven modernization plan in consonance with the roadmap laid down in the LTIPP. This is being achieved by the induction of the new platforms and weapon systems along with the continuous upgradation of the existing equipment.

(a) **Fighter Jets**. In the fighter fleet, Rafale induction is under progress. LCA Mk1A has been contracted. Deliveries will commence from Jan 2024. The MiG-29, Jaguar, Mirage-2000 and Mi-17 helicopters are being upgraded in a phased manner. Lastly and more importantly, the IAF is swiftly progressing towards complete Network Centric Operations and aims to improve ISR capability, Command and Control structures to meet the future challenges.

(b) **Helicopters**. The major induction in the transport feet will be the C-295 aircraft. Chinook and Apache helicopters have also been inducted.

(c) **Air Defense Capability**. There is significant progress in the Air Defense capabilities with the induction of new Radars and SAGW systems. The induction of S-400, MRSAM, VSHORADS, and CIWS will enable a layered Air Defense capability. Work has also commenced on the development of AEW&C Mk II by CABS, DRDO.

(d) Consequent to shifting regional and global balance of power, IAF is continuously working towards enhancing its capacity to meet the emerging challenges in all the war fighting domains. A substantial offensive and defensive capability and ability to swiftly deploy/swing the forces to desired area of operation demonstrates its capability to deter any adversary.

(e) **Indigenization**. IAF is sharpening its offensive edge through indigenization of aircraft, weapons and sensors (Light Combat Aircraft, Light Combat Helicopter, Brahmos, Long Range Surface to Air Missile), procurement of next generation assets such as Rafale and integration of weapons on existing and new platforms. IAF is also enhancing interactions in the form of exercises and joint training with friendly foreign countries to enhance cooperation and share best practices.

(e) **Drone Technology**. IAF is aware of changing character of warfare and emerging technological trends like drone technologies including anti drone and swarm drones, Manned-Unmanned Teaming (MUM-T) concepts utilizing UCAV and niche technologies. The role of Artificial Intelligence (AI) in planning and mission execution, quantum technology and advanced weapons including hypersonic weapon are key areas of further exploration and inclusion into IAF operational planning.

CAPABILITY BASED FORCE STRUCTURES FOR INDIA

Revolution in Military Affairs.Force Structuring can be done in two ways: Threat based or Capability based. Traditionally, Indian Force structures have generally been premised upon a threat-based analysis in the post-independence period. Indian Military history, however, can be studied in terms of the local Revolutions in Military Affairs (RMAs) that ushered in very major changes in the socio-political realm. India needs a further enhancement of RMA. A nation must empower itself economically if it wishes to generate and sustain an RMA. A huge Army needs the resources of a massive state. Post independence, India has unconsciously followed this Kautilyan Paradigm. Steps that can be taken for upgradation of RMA are as below:

(a) By major accretions in Air Power and transparency.

(b) By developing "Over the Hump" Air Assault capabilities that can be used across the Himalayas, in J&K and also for regional power projection.

(c) By using its Navy to project power along the Pakistani coastline to support Air-land offensives. This calls for the development of an operational manoeuvre capability from the Sea. This translates into a a viable Marine Capability of one to two divisions that is based on Amphibious Tanks/ICVs that can rapidly project power ashore in concert with major land offensives in the Desert Sector. To affect an RMA India needs to generate Over the Horizon (OTH) Beach assault capabilities using helicopters and Hover crafts (Air Cushion Vehicles). India must exploit the Sea Flank in any future conflict with Pakistan. A Turning manoeuvre from the Sea could unhinge Pakistan's defences and lead to victory.Further details of steps for various has been covered in subsquent paragraphs.

Airforce.

(a) **Fourth Generation Fighter Jets**. India has inducted sophisticated fourth generation fighters like the Mirage-2000, MIG-29 and the SU-30. Moreover 4.5th generation fighter jet Rafaele is alread under induction. It has just introduced the Israeli AWACs (mounted on a high endurance IL-76 platform). India has a definite transparency edge but not of a "revolution" standard. The prime focus area therefore has to be on an accretion of Airpower. India needs a 60 Squadron Air Force with a good mix of 4 and 5. Generation fighters that can deliver 60-70 percent PGM type ordinance instead of gravity bombs from the mid and high altitudes. The IAF will have to go in for two classes of aircraft .4th/5th Generation (SU- 30, Mirage 2000/Rafaele or US/European equivalents, the Mig-29/35 and Fifth Generation fighters being jointly developed with Russia) will be needed for the Air superiority and MRCA role.

(b) **Ground Attack Aircraft**. There is requirement of A-10 equivalent dedicated Ground attack aircraft. Trainer Aircraft like the Hawk can double for this role immediately and India could try and produce its own variants in large numbers to affect the surface battles in a meaningful way. The attack will have to be from beyond the shoulder fired SAM envelope. There is a need for a custom built Ground- Attack aircraft that is slower and relies more on stealth and Titanium armour protection and suppression of enemy air defences to carry out attacks (if needed from the low level also). In the operations in Chechnya, the Russians had also felt the need for such a Titanium hulled aircraft for close air support. Future LCA versions should also aim to address this requirement. Once a favourable air situation has been gained, the simpler dedicated ground attack aircraft must be used to exploit it with GPS guidance based ordinance.

(c) **Surveillance**. The Satellites, AWACs, Aerostats and UAVs would generate the transparency revolution. The Fourth/Fifth Generation fleet of MRCAs/ Air Superiority fighters would exploit it and the dedicated Ground Attack Aircraft would convert it to victory in surface combat by massing effects.

(d) **Private Sector**. India has to think beyond Pakistan. The main air threat now is from China. China purchased Russian Mig-29s and SU-27s. It reverse engineered them and is now mass producing the JF-10 and J-11 and working feverishly to develop its own Fifth Generation fighter. The quality of this indigenous fighter fleet is yet to be tested in combat. China is encountering problems in ingesting Russian technology. The break in Sino-Soviet cooperation after the Korean War had added to

this problem. To that extent India has absorbed Soviet/Russian military technology in a much better way. While China after Tiananmen had to suffer military technology sanctions, India has been better placed to, buy Israeli, French, British and American systems in addition to the bulk purchases of Russian military hardware. Indians have been able to innovate and mate Western software with Russian hardware/platforms. India, however, has failed so far to make a break through in indigenous design and development of its own aircraft. The HF-24 project was aborted for lack of a suitable engine. The LCA is encountering similar problems and time and cost overruns. The GE-404 engines are now being purchased to power the LCA even as we struggle with the Kaveri engines. However there is a strong need to persist. India will have to indigenise its capital arms manufacture. The only answer is to tap the vibrant and innovative Private Sector. Only then will India be able to nurture talent and attract it to these projects with suitable remunerations. The Soviets had many competing design Bureaus. India must similarly encourage competition between its various Public Sector Defense Enterprises as also with and amongst the Private sector to ensure the value engineering of the product. To get our Private Sector seriously involved in creating a worthwhile Military

(e) Industrial Base. In defence, the FDI cap has been raised from 26% to upto 75%% or beyond through government route. With the USA, the purchase process has revealed a lot of hurdles in the transfer of technology. India was never required to submit itself to so many stifling agreements while purchasing Russian, French or Israeli weaponry. It may be better to seek US assistance to build up a military

Indian Army.

(a) **Night Fighting Capability**. Indian Army needs to invest heavily in night fighting capabilities to increase the tempo and pace of its operations. The entire Tank fleet and Infantry Formations must overcome their night blindness (Active Systems) at a pace which can usher in a revolution in surface combat in South Asia. The investments will be limited but provide the highest payoffs.

(b) **Holding Ground**. Holding ground by firepower instead of manpower In 1956 the Pak Army had transited to holding ground by firepower instead of manpower. As a result they hold the same length of ground with half the troops that India deploys. The American gifted Recce and Support Battalions enabled Pakistan to hold ground with firepower and release matching force levels for offensive operations. It is an amazing fact that the Indian Army has still not redressed this ground holding differential that enables an Army half its size to release a matching number of formations for offensive tasks. India's Pivot Corps must now hold Ground with mobile Fire power based upon Fast Attack/Light Strike Vehicles and thereby release much more force levels for offensive tasks.

(c) **Artillery**. The Artillery Calibre must be standardized on the 155mm caliber at the earliest so that effects can be massed. After the Bofors crisis, the process of procurement/induction of any new Medium caliber Artillery systems got delayed substantially. It had purchased 400 Bofor howitzers. Sweden was thereafter supposed to transfer the technology to build another 1000 such guns in India. This never happened as the Bofors scandal broke out. It had to improvise by converting Russian 130 Medium guns to 155 cal. It also went in for further purchases of the World War II vintage Russian 130mm guns and 122mm guns. Only lately has it been able to add the Russian Smerch Multi-Barrel-Rocket Launcher System and the indigenous Pinaka system. It is yet to get its 1000 medium guns and its tracked/self-propelled artillery for supporting its armoured formations. Pace of development/induction of K9 Vajra and M-777 needs to be increased.

(d) **Force Structure**. One of the key lessons from Indian Military History is the need for large armies. A demographical study of India indicates that by 2026, India will have the highest Recruitable Male Population (RMP) in the world. Hence, the Gen V P Malik era idea of downsizing may not be apt for such a situation. Downsizing the Army can be a particularly bad decision in such circumstances. It could only add to the army of the unemployed which can pose a serious risk to India's Internal Security. In fact, Internal Security requirements have always necessitated the need for maintaining huge standing Armies in India and China. China today has a standing Armed Forces of 1.4 million men and an Internal Security Force (People's Armed Police) also of 1.4 million (demobilized PLA formations). India had provided a peak level of 2.5 million men in World War II (all volunteers). Today at 1.1 million men, it is still the second largest Army in the world. All talk of downsizing it is down right dangerous and completely out of sync with our realities. Internal Security tasks (CI/CT/Extremists) are hugely man power intensive. They are our primary threats. Manpower is India's key resource.

(e) **Islands of Excellence in a Large Army**. India will require a large standing Army. This also means that it will divert funds towards manpower instead of the Capital Budget for acquiring new technology. But we should not aim for across the board modernization of the entire mass but a three tier approach of high tech and cutting edge capabilities being fielded in some key formations and units that form Islands of Excellence. The balance may have technology that is fairly current. The Panzer Divisions in the World War II were such Islands of excellence in a mass Army many of whose formations that invaded Russia were using Horse drawn carts for logistics support. The Special Forces, Paras, the Armoured Corps and Mechanised Infantry, motorised Infantry Batallions and technology intensive Arms must form such Islands of excellence in our case.

Indian Navy. The India Navy must acquire the capability to Project Power in the Littoral and contribute meaningfully to any Air-Land conflict against Pakistan. It will have to project power ashore and must rapidly acquire the land attack capabilities in terms of three Carrier Battle Groups, enhanced Naval Aviation and a viable Marine Corps based not on straight legged Infantry but Amphibious tanks, ICV and Hover craft-based Mechanised Infantry that can rapidly break out from Beach heads and execute decisive tasks in a manner that speeds up the overall tempo of operations. It must also build up a sizeable inventory of
Land Attack Cruise Missiles and contribute to surface operations by deploying more Special Forces (MARCOS) units. These capabilities will also help it in any Out of the Area Contingencies. In the event of a conflict with China, it will help it to safeguard the Andamans and respond to any Chinese aggression by retaliatory interdiction of Chinese Sea Lines of Communication (SLOCs).

INDIA'S DEFENCE: FROM POLICIES TO CAPABILITIES

Recent Policy Decisions for Capability Development in the Defence Sector. Some of the policy decisions contained in the recently released Ministry of Defence (MoD) document are: appointment of the Chief of Defence Staff (CDS) and creation of the Department of Military Affairs (DMA), a new department in the MoD; promulgation (in August 2020) of a `negative list', banning imports of 101 defence related weapons and equipment, over the period 2020-2025; enhancement of the FDI limit in defence sector, in the automatic route, from 49% to 74%; promulgation of a revised (updated over 2016) Defence Acquisition Procedure (DAPAP-2020), with enhanced emphasis on indigenisation; refining of the offset policy for global acquisitions; setting aside nearly 58% (approximately Rs. 52,000 Crores, orUSD 7 billion) of the allotted capital- modernisation budget for acquisitions from domestic sources; 87% of the capital acquisitions approved during the Year 2020 being sourced from domestic industry; greater emphasis on technology development and innovation; emphasis on digitisation of internal processes; incentives to boost MSMEs and start-ups; and substantial emphasis on

enhancing defence exports (which increased from Rs 1941 Crores, or USD 262 million in 2014-15 to Rs 5711 Crores, or USD 772 million in 2020-21), ranking India 24 amongst arms exporters (although the India's share of arms exports for the period 2016-2020 is only 0.2%).

Export Target. An ambitious export target of Rs 35,000 Crores, or USD 5 billion in Aerospace and Defence goods and services have been set for the year 2025, in the draft Defence Production and Export Promotion Policy 2020. It was with this intention that the government had, in the budget for the year 2020, announced the establishment of two defence industrial corridors, one each in Tamil Nadu and Uttar Pradesh.
Earmarking of Funds for Indigenous Acquisitions. Continuing the process of defence reforms, another slew of measures has been announced in the first few months of the year 2021. In keeping with the precedent set the previous year, the share of the capital modernisation budget earmarked for procurement from domestic industry has been enhanced from 58% to 63% (Rs 70,221 Crores). Going a step further, from the funds earmarked for indigenous acquisitions, nearly 25% of the budget (Rs 17,500 Crores) has been sub-allocated for acquisition from the domestic private sector defence industry . In addition, Rs. 1000 Crores have been reserved for procurement from "Innovation for Defence Excellence (iDEX)" start-ups to give a major boost to defence technology. Budgetary support of Rs. 499 Crores has also been promised to support nearly 300 start ups/ MSMEs/ individual innovators and 20 partner incubators under the Defence Innovation Organisation (DIO) framework, over the next five years.

Dissolving of Ordnance Factories. Yet another bold step was taken on June 16, 2021 to reform the functioning of Ordnance Factories. The 246 year old Ordnance Factories Board (OFB), set up in 1775, which hitherto controlled the existing 41 Ordnance factories, has been dissolved.

Analysing the Policy Pronouncements. One of the primary reasons for India's inability to become self-reliant in the defence sector, despite being the third-largest spender on defence and largest/second-largest importer of global arms, has been the dichotomy between the need to remain operationally ready against potential threats from across the borders and the time required for indigenous design, development and induction of weapons and equipment through the process of spiral development, i.e., a choice between Atmanirbharta (self-reliance) and operational preparedness. The recent promulgation of the negative import lists needs to be viewed in this context.

Negative Lists. Commencing August 2020, a total of 209 weapons and items of military equipment have been banned for imports in the two `Negative lists' issued by MoD. This ban is staggered for implementation over the period December 2020 to December 2025, and includes items in which India has developed indigenous capability as well as some weapon systems which are still under development. It is the latter category that is of particular concern. A range of helicopters, transport aircraft, trainer and maritime reconnaissance aircraft, airborne early warning and control systems, close-in weapon systems, medium artillery guns etc. have been included in the negative list. Many of these are still at early development stage. It would clearly be counterproductive if the negative lists are used as a tool to 'keep the slot reserved', along with continuing capability voids, till such time the indigenous development is completed and production actually commences.

Capital Acquisition. The Defence Procurement Procedure (DPP) 2016 and the Defence Acquisition Procedure (DAP) 2020 have five well-defined categories for Capital acquisition listed in `decreasing order of priority 'with the most preferred category being `Buy Indian-Indian Designed Developed and Manufactured (IDDM)'and the least being `Buy (Global)'. It has always been an imperative to procure the equipment indigenously under the 'Indian' categories if available (operational) at that point in time. Each progressive step

towards the global purchase or partnership category has to be justified in detail to the Defence Acquisition Council. The intent of the 'negative list 'was thus already inherent in the procedure and was achieved, without sacrificing operational readiness or unduly constraining either the services or the Defence Acquisition Council (DAC). That this was occasionally 'negotiated', in the interests of operational expediency, led to the formal promulgation of the 'negative list'. While the intent may be laudable, it remains to be seen whether this will work for the good or become a self-created impediment.

Industry Orientation to Future Battlefield. While efforts are in hand to create a defence industrial base in India, the process merits consideration of a framework and a road map, taking into account various interlinked factors. The first is to define the contours of future wars likely to be fought in the Indian subcontinent. The classic infantry, armour, artillery dominated battles on land; predominantly a surface ships equipped Navy, complemented by submarines and its integral air arm for tasks at sea; and the Air Force, primarily utilising manned aircraft, to augment the land and maritime operations; are all set to change in the near future. Besides the traditional domains, capability also needs to be created in the cyber, electronic warfare, space, Intelligence Surveillance and Reconnaissance (ISR) domains. Furthermore, even kinetic war-fighting is progressively shifting to the use of long-range vectors, unmanned platforms, Artificial intelligence (AI) based decision support systems and much more. A glimpse of recent battles between Armenia and Azerbaijan and Israel Defence Force operations against Hamas clearly indicates the changing pattern of war-fighting. Israel claims that its operations marked the world's first use of artificial intelligence (AI) and supercomputing in a war. This calls for the services and industry to jointly evolve a future concept of operations, based on emerging technologies, calibrated for the period beyond 2030.

The introduction of these reforms suggests a positive intent and a resolve to enhance self-reliance in defence. An objective review, however, needs to be carried out to identify the challenges in implementation and to assess the results achieved.

RECOMMENDATIONS

Periodic Review. A periodic review of the policies for defence reforms, carried out between the MoD, Services and Industry (public and private sector including industry bodies), to monitor the impact on operational preparedness and the percolation of the desired benefits to the industry. Judicious implementation of the 'negative list', particularly for the weapons and equipment still under development. This must ensure that a balance is maintained between operational preparedness and indigenisation, with priority being accorded to the former. Short term leasing of equipment, though a sub-optimal option, may be resorted to in order to bridge the induction gap.

Budget Allocation And Sub-Allocation. A pragmatic review of budget allocation and sub-allocation for the public and private sector, and mapping this against the actual acquisition requirements of the armed forces. It must be ensured that this apportioning does not become an impediment to capability development, or a mirage for the domestic defence industry.

Multi-Domain Operational Capability. A clear understanding that with the modest defence capital budget allotted, building multi-domain operational capability is a greater priority. Achieving `Atmanirbharta', though important, is a supplementary objective. To promote the defence industry, MSMEs, start-ups and innovators alongside, additional budgetary allocations need to be built in to support this national vision. The Modernisation Fund for Defence and Internal Security (MFDIS), recommended by the 15th Finance Commission, needs to be created at the earliest. There is a need to regulate the overall size and structure of the

defence industry. Neither should it consolidate around a handful of arms majors, with the ability to orchestrate prices and competition, nor must it be split among numerous small entities with wasteful overlaps. An optimum size ensures healthy pricing and encourages innovation. The process of corporatisation and restructuring of the Ordnance Factories that has been started needs to be followed through with vision.

Production Capacities. The production capacities of the defence industry should be aligned to the expected demand from the armed forces, with an inbuilt stretch capacity for potential exports. This in turn should be linked to the likely budget allocations. Over capacities are as undesirable and wasteful as under capacities.

Incentivise Indigenous Manufacturing Base. The aim of achieving "substantive self-reliance in the design, development and production of (equipment) by creating "an ecosystem that is conducive for the private industry to take an active role, particularly for small and medium enterprises (SMEs). From SME perspective, the single biggest impediment has been absence of an empowered interface to deal with host of administrative, technical and policy issues whether with the Ministry of Defence or DRDO or any other relevant defence department. Evident from other developed countries, facilitating SMEs for Market access or access to high-end technology and technological spinoffs through defence research has been the single biggest source of path breaking innovations and technological spinoffs.

Role of Private Sector. There is urgent need "to build up a robust indigenous defence industrial base by proactively encouraging larger involvement of the Indian private sector, and innovative startups. There is a need for Indian Defence Industrial base to gear up and meet the vision and plan of Indian defence forces. There is also a need to incentivize the growth of a domestic defence industry. Some of the areas which could be start point:

(a) Creation of technology fund to assist Private sector in Defence R&D.

(b) Create a talent pool for skilled manpower. Ex service personnel who have first-hand experience of product operations and maintenance would be assets.

(c) Mandatory ToT in select areas as offsets

(d) Exports for business viability

(e) Encourage adaption of Dual Use Technologies

(f) Facilitate Indigenous Product Development

(g) Provide Test Environment/ Trial Ranges / Ammunition

(h) Single Vendor Procurements from Indian Industry be permitted with due checks and balances.

(j) Implement Gol /notification No. 18-0712010 dated 5th October, 2012 issued by Department of Telecommunication which stipulates, electronic products that have security implications for the country, indigenously produced equipment must be preferred, for Defence. Tax incentives be provided as for Electronic sector. Finally, the services and industry must jointly evolve a clear idea of the likely shape of the future battlefield, based on emerging technologies and the ground realities in the Indian context. This should, thereafter, guide building capacities and capabilities in emerging domains, rather than stagnating in the field of legacy weapon systems, whose place on the battlefield and space in the market is shrinking domestically and globally.

CONCLUSION

The Indian Army's vision to "ensure capability enhancement and operational effectiveness of the Army to meet all contemporary and emerging challenges" can be realized only through comprehensive support from the Indian defense industry. The Indian Army has prioritized its capability development requirements - it is now up to the industry to take up the challenge. Army is committed to make in India, industry must more than match the effort with increased involvement and investment in the Indian defense industry with the government's current thrust on 'Make in India'.

India with own huge domestic requirements, availability of skilled work force, opportunities to export, the confidence that is evident in the Indian industry and an environment where the industry leaders appear eager to collaborate. The challenge is to create an eco-system conducive to strengthening the indigenous capabilities in design and development, manufacture and the subsequent maintenance of the equipment. While the report and government acceptance of on renewal of policy framework to facilitate Make in India in defence sector is eagerly awaited. The expectations from the Industry segment are to simplify/rationalise the procurement procedures and remove the bottlenecks for long term association. The foregoing analysis is aimed at critically examining the recent policy announcements of the government in the defence sector to achieve Atmanirbharta, which is undeniably a laudable objective. There is, however, the need to pragmatically temper this goal to maintain the armed forces in a state of readiness to meet looming external security threats. A successful policy lies somewhere in between. Ultimately, it is only well designed policies, applied pragmatically, that will help us achieve both combat readiness and self-reliance in defence.

The procurement process is undoubtedly full of challenges but these are not insurmountable. Whereas, there is a need for regular evaluation of the effectiveness of policies and procedures at the level of the Ministry of Defence and the government, there is so much more that can be done at the level of the services. The Army being the largest service and fielding the largest array of equipment needs to improve its own processes by carrying out an internal analysis and taking effective steps to speed up the procurement process. There is also a necessity to improve the equipment availability state with the field force. The financial powers delegated to commanders at various levels should be utilised gainfully for this purpose. Accepting the shortcomings in its processes and taking steps to overcome them, particularly where internal measures can improve the processes, is the most important step towards capacity building. The fact that procurement delays continue in the Army, more than in the other two services, calls for serious introspection and immediate action by the Army.

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