

## ISSUE BRIEF

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### Restructuring India's Defence Industry

by Brig. Arun Sahgal (Retd.)



India's indolent journey towards defence self reliance continues with no clear end in sight. Despite a series of initiatives to reduce foreign dependence and create an indigenous defence industrial complex by spurring public and private sector investments through higher indigenisation, transfer of technology and simplified procedures, the reality is that the ratio of import to indigenous production remains at 70:30.

The new government of Prime Minister Narendra Modi appears to have identified defence reforms and building a self sustaining defence industrial base as a high priority. The basic question that arises is why, despite 60 plus years of efforts by some of the brightest scientific talent and a painstakingly created defence R&D set up in the form of the Defence Research and Development Organisation (DRDO), we remain so objectly dependent on imports.

The answer to this lies perhaps in mutually conflicting drivers that propel defence technology, industrial development and acquisitions in India. There are essentially four drivers – the Indian military, the political leadership and bureaucracy, the DRDO and Defence Public Sector Undertakings (DPSUs) and lastly the private sector. Each one of these drivers define technology needs and the means to obtain them according to their own perceptions, which are largely policy driven with scant regard to 'processes'.

The Indian military is the prime driver. Concerned with

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dwindling preparedness and operationally hard pressed, it naturally wants to induct what it perceives would serve it optimally in terms of operational efficiency. Hence this military wants the latest equipment that invariably includes advanced technology hardware that is largely available abroad. Consequently, all general staff qualitative requirements are stipulated on the basis of the "best of brochure" claims. In the absence of an apex co-ordination body such as a Chief of Defence Staff, or a permanent COSC, the defence procurement needs of the services are largely driven by service specific requirements, with little or no prioritisation or co-relation to desired capability development in tune with the nature of future wars. What is worse, there is limited political or bureaucratic operational oversight of proposed acquisitions. Consequently, different services are left to decide what they need, often with little or no coordination. As a result, different services have been known to buy similar equipment from the same or other vendors at hugely differing prices. There are no standard qualitative requirements for common equipment.

Second, and even more critical, is the absence of clearly enunciated national security or defence policies, with inadequate political oversight of capability development in relation to likely conflict scenarios. There is a precept of defence capabilities being created to fight two or two-and-a-half front wars in the minds of defence planners, with little clarity on what this means in terms of operations in a nuclear environment and impact on existing operational doctrines. The costs of such strategic thinking are also not debated, which often leads to bloated defence requirements and expenditure. This is essentially the outcome of a lack of political direction in terms of overall national security or military strategy. Even periodic defence reviews are not carried out, largely because the all-purpose bureaucracy that comes to man desks in the Ministry of Defence lacks the requisite expertise and politicians never challenge central premises of military thinking. Yet another exception as a result is the lack of prioritisation to ensure limited capital resources are spent efficiently to create credible defence capabilities. It is this single factor that has impeded not only capability development but also the creation of a credible defence industrial base.

The third player is the DRDO/DPSUs combine, which has over the years developed fairly substantial technological capabilities and would naturally want the armed forces to induct what they produce. The problem lies with the research and development model adopted by these organisations. The fundamental flaw in so far as the DRDO is concerned has been in its operating philosophy and its stand alone structure merely as a technology developer and demonstrator with little or no production co-relation. Ever since its inception, there has been a standoff between the military R&D set up, the Ministry of Defence and the services because of exaggerated expectations and gross misperceptions. The armed forces wanted the nascent DRDO to rapidly produce advanced technology weapons and systems at par with the Western and Soviet military industrial complexes. There was neither appreciation nor empathy for the situation prevailing on the ground. The fact that the DRDO had started operations when the country did not have even a basic defence industrial base and there was no private sector participation, was discounted.

The DRDO setup too is flawed and continues to be so because of its hierarchical structure, with seniority taking priority over talent and innovation. The pulls and pushes of the promotion structure have relegated true R&D to the background. The armed forces too failed to task the DRDO with developing a felt need or upgrading an existing system. Their comfort levels with Russian equipment and their pre-occupation with internal and external security concerns led to a progressive dependence on external sources for military needs.

Although defence public sector undertakings have played a crucial role in indigenisation, they are marred by low productivity, high production costs, overbearing bureaucratic controls and lack of synergy. Being part of the Ministry of Defence, there is little innovation or latitude in decision making. All investments, budgets and decisions on technology partnerships with foreign vendors are dictated by the Ministry. DPSUs are burdened by labour unions and political interests.

Lastly, there is the private sector, which has now been given access and opportunity to participate in defence production. A number of private sector behemoths such as L&T, Tata's, Mahindra's, etc., have emerged. These are at best licensed producers with little or no indigenous R&D and little capital infusion from the government and are often stone walled by the DPSUs. However, this appears to be changing with the new Defence Procurement Procedure (DPP) of 'make India and buy India', allowing private companies to choose foreign partners in particular sectors.

What all this means is that while a lot of energy and capital has been spent, there has been no overall vision guiding the development of an indigenous defence industrial base. Almost all elements of defence production remain stove-piped and there has been little effort to harness the growing national industrial capacity in ICT and other sectors to forge an integrated approach.

### **The Chinese Model**

It is useful to analyse the model adopted by China, which too started the journey to defence self-sufficiency at about the same time that India did, and see why they have succeeded while we have floundered.

The Chinese adopted a creative model for developing a credible defence industry based on civil-military integration (CMI), or the process of combining the defence and civilian industrial bases to develop common technologies, manufacturing processes, equipment, personnel, and facilities that can be used to meet both defence and commercial needs. The idea was to create synergies and co-operation between government and commercial facilities in research and development (R&D), manufacturing and combined production of similar military and commercial items, including components and subsystems on a single production line within a single firm.<sup>1</sup> The system was adopted to reduce the cost of weapons development, and accelerate the process of military modernisation. This strategy emphasised the importance of transfer of military technologies to commercial use and the transfer of commercial technologies to military use. This called for the Chinese arms industry not only to develop dual-use technologies, but also to actively promote joint civil-military technology co-operation.

The Chinese approach to defence technology development has been multi-tiered – the initial model was based on what can be termed “creative adaptation”, implying imitative capabilities or reverse engineering. Examples in the aerospace industry include the indigenisation of critical parts of the Russian Sukhoi-27 fighter to develop J-11B fighters. In this high-end imitation, the basic platform remained Russian but key avionics, including the fire control system, were either Chinese or were procured internationally/ clandestinely. The emphasis was on technology absorption and creating the requisite technological skill base. IPR and other issues were diplomatically resolved or simply overlooked by leveraging political and economic pressures.

The next step was 'incremental innovation',<sup>2</sup> which entailed tweaking indigenous designs with a process of 'creative adaptation'<sup>3</sup> to produce an indigenous Chinese product modelled on an existing platform. The Chinese frontline fighter J-10A is a classic example. It entailed developing an indigenous platform, much like the 'Tejas' (India's indigenous fighter), and incrementally improving and indigenising it batch by batch. The J-10A initially contained many Russian and Israeli components, which the Chinese gradually indigenised.<sup>4</sup>

The third step was 'architectural innovation' – rearranging the existing architecture to produce enhanced and innovative systems and their integration with the existing system architecture. The Chinese anti-ship ballistic missile DF21D is an example. The Chinese produced medium-range ballistic missiles of the DF 21 series with variants such as A, B, and C. DF21D was developed from these but with the innovation of a manoeuvrable war head linked to space-based assets capable of hitting a moving ship, surprising US defence planners both technologically and operationally.<sup>5</sup>

The next level of innovation, which the Chinese are attempting, includes 'component innovation' and 'disruptive innovation', involving both architectural and component innovation, by developing improved

components in creative new designs. The result has been that, since 2012, Chinese manufacturers have unveiled a wide array of new airborne weapons and air defence systems. They continue to invest significant resources in developing military engine technology and drone programmes, as well as their components. In the fighter arena alone, the Chinese aviation industry has been developing a diverse portfolio of new designs that include next-generation fighter aircraft prototypes, like the J-20 and J-31, along with the development of the J-15 carrier-based fighter and the accelerated modernisation of the Chengdu J-10 and Shenyang J-11 fleets.<sup>6</sup>

The question is: how has China achieved this? Until the early 1990s, it too followed the state controlled defence and technology model that currently prevails in India. The Chinese defence industry was separated between research and development (R&D) and manufacturing units. When R&D developed a product, the defence industrial ministry — called the Commission for Science, Technology and Industry for National Defence (COSTIND) — would assign a factory to build the equipment. But when the factory got the blueprints, there was confusion because they had not been involved in the design. China realised that this was an unworkable model and infused the private sector into the overall defence industrial base.

Concerned about Chinese state-owned companies producing outdated and inferior equipment, China set about creating its own military-industrial complex in the late 1990s, with the private sector taking a leading role. Well-funded defence groups have rapidly absorbed the technology and expertise needed to build complex weapons, freeing China from its former heavy reliance on Russian and other foreign manufacturers. The long-term Chinese goal is to transform some of the leading contractors, such as China State Shipbuilding Corporation (CSSC), Aviation Industry Corporation of China (AVIC) and China Aerospace Science and Industry Corporation, into home grown versions of American giants Lockheed Martin and Northrop Grumman or Britain's BAE Systems etc. It will be of interest to note that China's top 10 defence groups have estimated combined assets of Chinese Yuan 2 trillion (\$315 billion) with more than 70 listed subsidiaries, including over 40 with defence-related businesses.<sup>7</sup> Beijing has made repeated calls to speed up listings of all but the most sensitive military businesses.

## Lessons for India

In India, we need to take a political call on how to develop and structure our defence industrial complex. There is a tendency to develop policies and lay down objectives with little or no understanding of objective realities or how these processes will actually work on the ground. It is true that the DPSUs have played their part in developing basic capabilities and equipment for the armed forces, but they have failed to provide modern state-of-the-art weapons systems because of the inherent limitations discussed earlier.

What needs to be done is to take a closer look at the existing model and rework it where required. Taking a cue from the Chinese experience, there is a case for disinvestment in DPSUs. A model on the following broad lines could be considered:

- (a) Review of existing DPSUs and creating four or five entities focused on major weapons systems. As an example, HAL could be converted into the equivalent of the Aviation Industry Corporation of China (AVIC), with subsidiaries for each assembly line, responsible for production, indigenisation, sales and maintenance of that assembly line. These should be independent companies listed on the stock exchange, which would have to raise capital from the market for future expansion.
- (b) Similar disinvestment and reorganisation should be done in other units dealing with aero space, ship building, artillery, armoured tanks and other weapons systems or related services. These industries should be developed on a public-private partnership basis, with the initial seed capital to

be provided by the government and some amount invested by the promoters. There should be no control by the Ministry of Defence as there is at present.

- (c) For R&D interface, concerned laboratories of the DRDO must work directly with these companies as their design and research centre; the nature of affiliation and resources for them can be fine-tuned based on the final model adopted.
- (d) Foreign investment, offsets and the kind of technology transfers needed are decisions that must be left to individual companies based on the overall policy laid down by the government in terms of guidelines and not regulatory percentages.
- (e) Each defence industrial unit must be encouraged to set up its own component subsidiaries. With greater standardization, this could lead to development of dual use components which can also be exported. There can be a mother corporation for common and sophisticated components.
- (f) Export policy is another area that needs to be carefully considered. It is simply not feasible for a country like India to invest vast resources in defence industrial complexes without a clear-cut export policy. In fact, if India was to emerge as a net exporter over a period of time, this would provide it with similar leverages as those enjoyed by major defence MNCs of the developed countries.

## Conclusions

The foregoing analysis clearly highlights the need for steps to be taken at multiple levels to develop a strong, credible and diversified defence industrial base for India. Broad conclusions emerging out of the foregoing analysis are:

- (a) Need for greater harmonization of the four principal drivers, which at present are working at cross purposes. This demands greater ownership by the political leadership in defining credible defence capability guidelines which in turn are based on articulated national security priorities.
- (b) Laying down procurement priorities attuned with a strategic understanding of current and future threats and challenges. The military must be equipped commensurate with all envisaged threats and contingencies.
- (c) Building capability must harness both direct procurements and increased indigenous defence production, leveraging transfers of technology, offsets and DRDO-developed technologies.
- (d) Over the years, DPSUs have become unwieldy, largely unproductive and cost ineffective. Success stories of indigenisation are few and far in between. DPSUs can be made more productive and efficient by adopting a new model based on public-private partnership, with serious private sector participation both in capital intensive large units and SMEs. The private sector must come forward to become a credible and innovative stake holder.
- (e) The policy of notifying large private sector companies "Raksha Udyog Ratnas", which allows these companies to be treated at par with DPSUs, has been hanging fire for several years. The government must take an early decision on this notification, despite resistance from trade unions. This will enable these private sector companies access to foreign technologies, collaboration with overseas manufacturers, and government investments for design, development and manufacture. The government must establish clear criteria for such notification, which would allow more companies to seek such a status, thereby widening the production base as well as indigenous R&D.
- (f) Lastly, there is a need to review the role and functions of the Department of Defence Production. It must cease to exercise control over defence public sector enterprises. Its role should be limited



**ICRIER - Wadhvani Chair in  
India – US Policy Studies**

**Indian Council for Research  
on International Economic  
Relations**

**Core 6A, 4<sup>th</sup> Floor  
India Habitat Centre  
Lodhi Road  
New Delhi-110 003**

**Phone:**

**91 11 43112400 X 402 /435**

**Fax:**

**91 11 24620180**

**Website:**

**WWW.ICRIER.ORG/ICRIER\_WADH  
WANI**

**E-Mail:**

**uschair@icrier.res.in**

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to laying down policy guidelines and ensuring synergies between components of the defence industrial sector.

The problem with India's existing defence sector is that policies are not matched with capabilities and skill sets required to develop a defence industrial base. Increased FDI limits, greater private sector participation and a well defined export policy can help induce requisite capacity creation. There is urgent need for innovative and out-of-the-box thinking to push defence sector reforms forward, taking cognisance of the recommendations outlined above.

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*Brig. Arun Sahgal (Retd.) is the Executive Director of the Forum for Strategic Initiatives, New Delhi.*

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