



## **SOURCING OF INDIAN DEFENCE EQUIPMENT: HISTORY AND TRENDS**

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India has the dubious distinction of being the largest arms importer in the World, a place it wrested from China in 2010.<sup>i</sup> India also has a large domestic arms and equipment manufacturing set up that functions almost totally in the Public (Government owned and operated) sector of the economy. Many of these Public sector armaments and equipment manufacturing companies, such as the Indian Ordnance factories, have been in existence since well before India's independence from British rule in 1947.<sup>ii</sup> These organisations are commonly referred to as Defence Public Sector Undertakings (DPSUs). Despite this domestic infrastructure to manufacture defence equipment being in existence for such a long time India has been unable to develop equipment required by her armed forces and thus has been forced to import the bulk of equipment required by the armed forces. There are some indications that this situation could change in the medium term with India developing a degree of self-sufficiency in armaments and equipment while also possibly becoming an exporter of some equipment to friendly countries.

### **History and Analysis of Defence Manufacturing in India**

The first Ordnance factories were set up in India by the British colonial government after need for this was accepted in 1775.<sup>iii</sup> The gun powder factory, set up at Ishapore in 1787, later, from 1904, went on to manufacture rifles at the same location.<sup>iv</sup> A gun carriage factory was set up in 1801.<sup>v</sup> Until Indian independence in 1947 these ordnance factories manufactured light arms and ammunition while all other equipment was imported from Great Britain.

There were 18 Ordnance factories in operation in India when the country gained independence in 1947. Addition of over 21 factories since then has led to there being close to 40 ordnance factories in operation today.<sup>vi</sup> These factories manufactured light arms and ammunition and a few articles of general use such as clothing and kit items such as overcoats, tents etc. All heavy equipment continued to be imported, initially from the UK, and later from various sources including the Soviet Union and other European countries.

### **Indian Industrial Policies and their Effect**

The Indian National Congress (INC) was the largest political party in pre-independence India and was widely expected to form the first Indian government on the country gaining independence. At its 1946 conference at Lahore the INC discussed, formulated, and adopted an industrial policy for the independent country. These industrial policy resolutions of 1946, 1948 and later envisaged keeping several sectors of the economy entirely in the Government's hands.<sup>vii</sup> The policy listed out these sectors quite clearly. The armaments and ammunition manufacturing industries, shipbuilding, and aircraft building were to be state monopolies that excluded the private sector totally.

India's first Prime Minister, Pandit Jawaharlal Nehru, enlisted the help of Mr Patrick Blackett to advise him on industrial policy in the early years of Indian independence. Mr Blackett advised the government to focus only on manufacture of low technology light weapons in the country.<sup>viii</sup> He advised the import of all heavy weapons as well as aircraft and associated equipment. The industrial policy resolution of 1946 was further modified in 1956. This modification made the industrial policy even more stringent. The new policy resolution enumerated three lists.<sup>ix</sup> As laid out in these three lists, some sectors of the economy were to be kept a state monopoly, other sectors were to allow participation of private entities but on the condition that the state, in due course, would take these over as monopolies. The third section comprised sectors that would allow both the private sector as well as the public sector to operate. Manufacture of arms and ammunition was placed in the first of these lists. These policies effectively kept the private sector out of the weapons and associated industries as they could, by law, not enter sectors reserved exclusively for the state.

In addition to the ordnance factories, other DPSUs such as Hindustan Aeronautics Ltd. (HAL), Bharat Electrials Ltd. (BEL), Bharat Heavy Engineering Ltd. (BHEL), Bharat Dynamics (BD), etc. were set up. Private sector companies were loath to invest in industries that the state had decided to take over in the near future. The DPSUs were run as departments of the central government. These factories were staffed by bureaucrats and functioned under tight government control. Over time these industries attempted to increase the span and range of the equipment manufactured by them. The country procured most of its defence needs from foreign sources and tried to undertake manufacture under license of these items in order to increase self-reliance. Thus the Belgian self-loading rifle (SLR) was manufactured under license at the Ishapore ordnance factory. The imported Vampire jet fighter was manufactured under license at HAL, Bangalore, (as was the British Gnat light fighter, Jaguar and the Soviet MiG-21); The British Vickers Main Battle Tank (MBT) was manufactured under license as the "Vijayanth" tank at the Heavy Vehicles Factory at Awadhi. Over time the successors of these weapons systems also came to be manufactured as follow on products.

In this manner these public sector facilities gained experience in manufacture of foreign designs where all blueprints, tools and other equipment was supplied by the original equipment manufacturer (OEM); obviously this system left no room for original research and development (R&D) by the DPSUs. Some of these DPSUs followed a cost plus system of fixing the price of their products. For instance HAL followed a system of taking the cost of manufacturing an aircraft, adding its desired profit margin to come to the price at which this item was sold to the armed forces. Being government owned companies, all the labour friendly labour laws promulgated by the Government were fully in force in the DPSUs and heavy unionisation of the workforce was a fact of life. This workforce spared no effort to obtain better benefits and perks in addition to the job security that the labour laws in force gave them. The pay and perks of workers were not productivity linked and job security was high as these were central government jobs. The higher management levels of these public sector organisations were assured a profitable mode of operation with the cost plus pricing model and so were not keen to rock the boat.<sup>x</sup> This situation did not give these organisations' workers any incentive to increase productivity or innovativeness. Design and development were eschewed in favour of license manufacture as this led to no

Research and Development (R&D) funds outflow and risk. In the end these large public sector organisations ended up producing just adequate, often poor quality equipment at high prices.<sup>xi</sup>

The end users suffered through use of sub-optimal equipment due to the maladies afflicting the public sector defence manufacturing companies. The services tried to improve the system through the two pronged approach of pressurising the Government of the day to improve the public sector armaments companies and trying to appoint serving senior officers to head these companies. HAL was led by senior serving officers of the Indian Air Force (IAF) for several years. Air Chief Marshal (ACM) P.C. Lal and ACM O.P. Mehra were Chairman of HAL prior to being promoted to Chief of Air Staff (CAS). These attempts failed to shake the lethargy that had crept in to these companies and the strong political party affiliated unions could not be budged. Over time the ability of the DPSUs to produce acceptable locally designed and developed equipment deteriorated further. Hence the armed forces were constrained to import required military equipment.

Even collaborative ventures that tried to build up local capabilities through interaction with foreign experts failed to get off the ground.<sup>xii</sup> The HF-24 “Marut” fighter designed with active involvement of Prof Kurt Tank of the World War-II fighter Focke Wulf 190 fame came to nought as the organisation failed to find a suitable power plant for it. Hence India continued to import military aircraft. A similar situation existed in other fields. The Heavy Vehicles Factory along with India’s Defence Research and Development Organisation (DRDO) failed despite spending over 30 years to build the Arjun tank to fully meet end user requirements. Development of artillery systems suffered similarly. Any major modern land and air weapon system taken up for R&D in India shows this sad path of non-completion.<sup>xiii</sup> Over time India’s security environment has deteriorated with a nuclear armed hostile Pakistan to the West, a belligerent China to the North and terrorism sponsored by Pakistan spreading its tentacles deeper into the country. Great power incursions into the neighbourhood further exacerbate India’s security concerns. In this security situation the importance of fielding effective equipment in the three services becomes even more important. The fact that defence modernisation performance took a back seat in the early 1990s due to a severe resource crunch makes rapid modernisation of the equipment and capabilities of the three services even more important today.

### Current Situation and Hope for the Future

Since 1991 the Government of the day has been slowly liberalising the country's industrial policies to allow greater participation by the private sector in defence manufacturing. This has run in parallel with liberalising the licensing regime for setting up operations in the defence manufacturing sector. The latest in this trend is the "make in India" initiative undertaken by the present government led by Shri Narendra Modi.

This unfortunate situation of the inability of domestic DPSUs to deliver the goods and the urgent need to modernise the forces' equipment have contributed in large measure to making India the largest defence importer in the world. Some sections of the Indian defence industry have been able to secure a few small export sales to other countries. However, in terms of value as well as technology these limited exports are of negligible importance. By and large the products produced by India's DPSUs have not been able to obtain adequate sales due to performance, technology, after sales support, and cost issues. These products, in large part due to the ills plaguing the industry, have not proved to be internationally competitive. Over the years it appeared as if reform fatigue had set in. The major stakeholder in this scenario is the Indian armed forces. After repeated attempts to reform the DPSUs failed to get these organisations to perform up to required levels, it appeared that the armed forces had been forced to reconcile themselves to import of major equipment as the given state of affairs. In the past few months the new Modi Government, that took power in mid-2014, has indicated that it aims to take a more focussed look at improving this situation. There appears to be a concerted push towards increasing India's defence manufacturing capabilities. The Indian Air Force's (IAF's) HS-748 "Avro" replacement program has been earmarked as a venture in which after import of a few aircraft from the foreign vendor the remainder are to be built in India in collaboration with an Indian private sector player. In this manner it is hoped that private sector entry into the defence manufacturing sector will be facilitated. Several other import projects have recently been put into the "make in India" category. The projected replacement of the IAF's HS-748 "Avro" aircraft is being bid for by a "make in India" initiative led by TATA Sons in collaboration with Europe's Airbus Industrie.<sup>xiv</sup> Details of this venture are being ironed out between the ministry of defence and the IAF. This new trend involves private companies in India being encouraged to tie up with foreign partners for technology availability and to bid for major Indian contracts. Even equipment

that was intended to be part imported and part manufactured under license by DPSUs is being pushed for only local manufacture by Indian companies, operating in the public or private sector with foreign collaboration where required.<sup>xv</sup> At least at the current time these initiatives by the government appear to be having some effect. Indian private players such as Larsen and Toubro (L&T), Tata Advance Systems and Bharat Forge are seeking to enter products made by them, such as artillery systems, into consideration for procurement by the Indian Armed Forces.<sup>xvi</sup> The Ordnance factories are also putting their artillery systems forward for user trials. For the light utility helicopter (LUH) program the government has reportedly scrapped the earlier import process and is now in favour of making the LUH in India, possibly with a foreign collaborator.<sup>xvii</sup> All these are indicators that at least at the current time some movement forwards towards reducing India's import dependence for military equipment are taking place. The issue ahead is to convert these initial expressions of interest into firm contracts to produce equipment in India in both the private and public sectors. Apart from these new collaborative measures with foreign companies to build her equipment in India to win Indian contracts, there is hope of successes from the DPSUs' independent efforts also. It had been reported earlier that India's DRDO had developed a laser guided bomb kit for bombs of 450 kg or 1000lb calibre, called "Sudarshan". Now it is reported that DRDO has successfully tested a glide bomb of 1000 kg calibre with precision guidance. More significantly it is reported that his weapon was tested to a range of close to 100 km.<sup>xviii</sup> This is significant because the earlier tests of Sudarshan on 450 kg calibre bombs was reported to have a range of 9 km.<sup>xix</sup> The reportedly enhanced range of the glide bomb has important tactical implications in providing a large standoff attack capability. Such standoff attack capability, especially of 100 km, could permit aerial attack at targets by fighters that are now able to stay outside the terminal defences that the enemy has arranged to defend the target.

Of course it goes without saying that the successful test of the development weapon reported in the press is but the first step in full development of the weapon towards full production for induction into service. Several more development tests to prove its configuration followed by user trials to ensure that the weapon meets operational requirements are expected to be required. However, the successful first test gives hope for good progress in that direction. Seen in conjunction with the continuing development of the Astra Beyond Visual Range (BVR) air-to-air

missile, Nag anti-tank missile, and induction into service of the Akash surface-to-air missile the situation appears to be improving at last.

From the point of view of sourcing weapons, such developments could provide indigenous options for sourcing advanced weapons. Such availability of advanced weapons from domestic manufacturers could assist in reducing dependence on foreign suppliers, and hence the import bills of armaments for the country. Domestically manufactured weapons should also cost substantially lesser than imported weapons of similar capability. This of course is provided the developer of the weapon, DRDO, is able to find a suitable manufacturing agency able to maintain required quality, production rates, and cost controls. Moreover the manufacture of newer foreign systems in the country, with a dedicated indigenisation effort in place, should help local industries especially in the private sector to ramp up their capabilities.

### Conclusion

India has a very poor record in manufacturing equipment required by its armed forces. Since before independence India's defence manufacturing industry was PSU dominated. In part the country's industrial policies were to blame for keeping the private sector out of manufacturing defence equipment. Since 1991 the country's industrial policies have been amended to allow the private sector to operate in the defence equipment-manufacturing sector. The latest policy changes push towards "make in India" show promise of giving defence manufacturing in India a boost especially as the private sector is now coming forward on its own and in collaboration with foreign partners manufacture defence equipment in India. Such efforts could reasonably be expected to lead to technology and capability infusion in Indian industries. Coupled with the recent successful tests of DPSU developed weapons this holds promise for a better performance of domestic manufacture of defence equipment in the medium term future.

*(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies (CAPS))*

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