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REVIEW ARTICLE

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Indigenization of Defense Technology: Current Status, Perplexity and Recommendations for Make in India

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ABSTRACT

The defense industry, (or military industry) is a part of industrial sector of a country which is involved in research, development and production of military technologies, equipments and arms. India has 3rd largest armed forces in world (1, 325, 450 active personals) after China and US. It is also largest importer of arms and holds 14% of world's arm imports. The present review describes main aspects and suggestions about how India can achieve self dependence in the field of defense technology. The main roles and potentials of DRDO and domestic private sector units have been critically discussed in the paper.

Key words: Indigenization, Domestic sector, Offset policy, procurement policy.

INTRODUCTION

DEFENSE TECHNOLOGY SECTOR: CURRENT SCENARIO

Expenditure

Budget of 2015 allocated 40 billion for defense spending and for this India is ranked 8th in defense expenditure. India currently spends 2.4% of GDP to defense sector. Army receives largest share of Indian defense budget.

Production, Policies & Prospects

Domestic manufacturing is mainly dominated by DPSUs and Ordnance Factories. Over last few years role of Indian private companies is being increased. Among them L & T, Tata, Mahindra and Mahindra and Pipavav Defense are major stakeholders. Major foreign investors are Airbus (France), BAE India Systems (UK), Pilatus (Switzerland), Lockheed Martin (USA), Boeing India (USA), Raytheon (USA), MBDA (France), IAI (Israel), Rafael (Israel). In a move of liberalization the 2014-15 budget increased FDI limit in this sector up to 49 percent which is to be decided on a case to case basis.

Indian government has laid down DPP and offset Policies. Such policies are revised time to time.

India currently procures 70% of its technology from imports but the government aims to receive 70% of its equipments from indigenous market and 30% from imports over next decade. Government aims to increase *Indianization* and Indigenization of defense technology for self reliance.

DPS: ITS PRESENT ROLE& PROSPECTS

Since India aims for systematic reduction on defense technology imports, all stakeholders, including domestic private sector must be utilized. In most developed countries, defense sector is led by private companies and India should act similarly. Until 2001, the Indian defense industry was largely dominated by DPSUs. In 2001, in order to stimulate self reliance, government allowed private sector participation in defense sector. Most of the private firms have not developed much in defense sector. Most of Indian firms do not produce high end products such as tanks, submarines or aircraft, but they provide other equipments and sub-systems. M & M have started a new defense vehicle manufacturing plant in Prithla (Haryana). The company is also planning to set up a defense vehicle plant in Gujarat. M&M's has manufactured armored vehicles range which includes the Axe, Rakshak, Marksman, bulletproof Scorpios and Boleros, and Rapid Intervention Vehicles. Tata Group is a part of F-Insasprograme of Indian army. Other companies are Larson and Turbo, Rolta India Ltd, Tata, Pipavav defense (acquired by Reliance Infrastructure in 2015) and Offshore Engineering are involved in different projects. Two subsidiary companies of RIL viz. RATs and RSSs. RIL has signed agreement with Dassault Aviation (France) for medium multi role combat aircraft (MMRCA) and with Raytheon Co. for security systems.

Indian firms are presently juvenile in defense manufacturing. They need incentives by the government to encourage them. These incentives could be in the form of initial grant, tax concessions, subsidies, land at concessional rates for setting up ancillaries, finance, etc. Increasing FDI cap up to 49% is a right step in this move.

DTI & its Perplexity

No industrial base

Poor industrial base is the major problem for development process of Indian defense sector.

No proactive steps for indigenization

Since we attained independence, we have imported technology and equipments for our defense requirements. Due to many diplomatic and political reasons, India suffered high costs, delays or even denial of parts and sub-systems. Self reliance in defense sector was seldom in consideration of Indian leadership. No concrete policy was laid down for Indigenization.

Perception of Armed forces

The armed forces in India till now had a mistaken perception that ‘fully functional compliance’ should met for combat readiness. Such perception has created a standoff between military and the industry. Such approach needs urgent review. Such over-expectations are impractical in a country like India which has no industrial base and a sole organization (viz. DRDO) is working for development of defense technologies. So indigenous equipment which satisfies the *initial operational clearance* should be inducted for service. However for full combat induction (that met parameter as per GSQR) and further improvement can be done later with the user (military).

Lack of efforts by PSU to assimilate technology

Most of the technology imported by India is through DPSUs and then transferred to armed forces. PSUs have continued to import and use a large number of sub-systems and parts over a long time. DPSUs haven’t made any effort to manufacture through reverse-engineering after the induction of technology. A fair example of this is the maintenance of the AN-32 aircraft after dissolution of Soviet Union. If PSUs would have made the system and sub-parts, such dependence can be avoided. Such indigenization efforts also ensure of business to the local industry over the entire life-cycle of the aircraft and ensure timely support especially at the end of life.

Lack of inclusion of MSME

The Government should encourage MSMEs to undertake equipment repairs, for which we are still, have to send them abroad to the Original Equipment Manufacturer. Opting aboriginal vendors we can save sizeable quantum of foreign exchange and make them acquainted with the technology.

No Outsourcing and negligible role of private companies

Armed forces are entirely dependent on DRDO or PSUs for all sorts of technology development. Technology is not classified as security sensitive and security insensitive. We can go for outsourcing for high technology if it is not security sensitive. While DRDO can focus on R&D of security sensitive nature. In India, private sector participation in defense sector is negligible, while in most of the developed countries it is led by private players.

Defense procurement policy

DPP in India is released with the aim of indigenization of acquired technology and self reliance but in spite of this it has many demerits. DPP is least concern about of ToT from foreign manufacturer. No significant incentives are given to domestic manufactures to encourage production by them.

Lack of clarity in defense offset policy

The defense offsets policy of the GoI, however encourages local vendors by making mandatory requirement for foreign vendor to procure 30% of his order value from Indian sources, is expected to provide an opportunity for indigenization of parts and assemblies. However, lack of clarity in the rules and implementation of offset guidelines have been impediments in the successful establishment of offset partnerships. The Government needs to act quickly to address this issue.

Lack of investment in R & D, research base and human resources

Indigenization and innovation as well requires knowledge, skills and human resources. Unfortunately India hasn't focused on higher levels of basic and applied research. Indian engineering graduate from premier institutes like IITs, choose huge package jobs, managerial positions or civil services rather than to join R & D institutes. Government should encourage them by making such jobs more lucrative.

DRDO& its role

In a visionary move in 1958, DRDO was set up to develop technology for armed forces. Today 52 laboratories work under DRDO for R & D in the diverse fields like electronics, missile development, avionics, security systems and biotechnology. DRDO efforts have been appreciated for in-house development of missile program for country. Today, India is one of a few countries having intercontinental nuclear capable missiles. India has entire nuclear triad combat readiness, which is the result of efforts of DRDO. DRDO is sometimes criticized for scant respect for timelines. Ever since its inception the organization has suffered from over-expectations from armed forces. Armed forces wanted "the best" or "full compliance", at par with advanced countries, from an organization working without any industrial base or production capabilities. A report by CAG (2013) found that only 29% of the products developed during the last 17 years are being used by the Armed Forces.

DRDO& associated problem

Internal setup of DRDO is accused to be flawed as it is hierarchical with seniority based promotions putting aside talent and innovation. There are no industrial tie-ups for technology developments. Insufficient funding is major cause, only about 5% of total defense budget is allotted to DRDO. Appointments to the higher posts of DRDO are not proper. Also, undue favor is given to foreign vendors while buying components, sub-systems and materials.

REFORM DRDO FOR INDIGENIZATION: RECOMMENDATIONS

Operational induction should be encouraged and over-specification by armed forces should be avoided. The final combat induction as per GSQR norms should be done at later stage after further improvements and indigenization. Role and collaboration with private sector companies and foreign defense companies should be encouraged. After transfer of technology, indigenization efforts should be made by reverse engineering and manufacturing sub-systems within the country. A commercial arm (in the lines of ANTRIX of ISRO) should be set up which can coordinate with the end users. Universities and premier institutes like IITs should be encouraged to work on research projects related to defense technology which can be funded by agencies like CSIR and DST. A Defense Research and Development Commission should be established as per recommendations of Rama Rao committee. DRDO should be given more autonomy. DRDO labs of similar R&D interests should be merged and their management should be decentralized. Unnecessary and irrelevant research projects should be dropped. A complete makeover of DRDO, in the lines of DARPA (of US) and Office of the Chief Scientist (OCS) of Israel, is recommended by many experts. Such organizations do not have their own research labs and have minimum manpower; rather they identify talent and entrepreneurship skills and give contractual projects to private players.

RECOMMENDATIONS FOR MAKE IN INDIA***Reform of DRDO, DPSUs & OFB***

Due to combinations of several reasons the major institutions (DRDO, DSPUs & OFB) responsible for technology developments and production are not globally competitive.

Several committees have been constituted to increase their efficiencies. Some of them are as: Earliest creation of a Defense technology commission, all DPSUs should be listed in stock markets to increase their corporate responsibilities and all OFBs must be corporatized.

HR development

India lacks adequate skilled human resources both in number and quality which suits the requirements of defense industry. Most of the scientific staff of DRDO carrying research work lacks higher degrees in research like PhD. Rama Rao committee also noticed that most of the staff haven't gone proper training. There is also lack of dedicated defense technology universities in India. Universities should be established in the lines of NDU & NIU (USA).

Learning rather than import from the countries with cutting edge innovation

DRDO functioning can be improved by careful examination of working of world's best institutions like DARPA and OCS, Israel, which have developed cutting edge technologies. Both the organization work with minimum manpower, just to recognize innovative potential of virtually any domestic agency of the country and give contracts to them. No discrimination is made on basis of public or private sector, academia or individuals. While policy maker in India have some sorts of mistrust for all potential stakeholders except for DRDO or DPSUs.

Reform of existing plans for R&D, acquisitions and manufacturing

Most of the plans like 15-year LTIPP, (5 year, SCAP and 2-year roll-on AAP) deals with acquisitions of equipment. DRDO and local enterprises are not included in this planning. There is even no platform where industry and armed forces can interact for their respective plans and requirements. It has been suggested that LTIPP should be replaced by a defense manufacturing and, R & D plan which should be inclusive in nature having stakeholders from all domestic partners.

Institutionalization of defense manufacturing

India lacks an institution for making a road map, setting up target and monitoring and providing a common platform for industry, institutions and end users (armed forces). An inclusive entity viz. DMCP should be put in place at earliest priority, under the superintendence of Defense minister. The present DAC works only for short term appropriations (acquisitions), putting aside goal of self-sustenance production.

Abbreviations

MSME (Medium & Small Enterprises), DAC (Defense Acquisition Council), DMCP (Defense Minister's Council on Production), LTIPP (Long Term Integrated Perspective Plan), OFB (Ordnance Factories Board), DPSU (Defense Public Sector Units), SCAP (Services Capital Acquisition Plan), GSQR (General Staff Qualitative Requirement), DARPA (Defense Advanced Research Projects Agency), CSIR (Council of Scientific & Industrial Research), DST (Department of Science & Technology), GoI (Government of India), GDP (Gross Domestic Product), OCS (Office of Chief Scientist), AAP (Annual Acquisition Plan), NDU (National Defense University), NIU (National Intelligence University), R & D (Research & development), ToT (Transfer of Technology), M & M (Mahindra & Mahindra), RIL (Reliance India Limited), RAT (Reliance Aerospace Technologies), RSS (Reliance Security Solutions)

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