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Defense Industries A Way Ahead For Self Reliance

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ABSTRACT: The Government has taken several policy initiatives in the past few years and brought in reforms to encourage indigenous design, development and manufacture of defence equipment, thereby promoting self-reliance in defence manufacturing & technology in the country. These initiatives, inter-alia, include according priority to procurement of capital items of Buy Indian (IDDM) category from domestic sources under Defence Acquisition Procedure (DAP)-2020; Notification of four 'Positive Indigenisation Lists' of total 411 items of Services and three 'Positive Indigenisation Lists' of total 3,738 items of Defence Public Sector Undertakings (DPSUs), for which there would be an embargo on the import beyond the timelines indicated against them; Simplification of Industrial licensing process with longer validity period; Liberalization of Foreign Direct Investment (FDI) policy allowing 74% FDI under automatic route; Simplification of Make Procedure; Launch of Mission DefSpace; Launch of Innovations for Defence Excellence (iDEX) scheme by involving Start-ups & Micro, Small and Medium Enterprises (MSMEs); Implementation of Public Procurement (Preference to Make in India) Order 2017; Launch of an indigenization portal namely SRIJAN to facilitate indigenisation by Indian Industry including MSMEs; Reforms in Offset policy with thrust on attracting investment and Transfer of Technology for Defence manufacturing by assigning higher multipliers; and Establishment of two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu; Earmarking of 25% of R&D Budget for Industry led R&D; Progressive increase in allocation of Defence Budget of military modernization for procurement from domestic sources, etc.

KEYWORDS: government, defence, self, reliance, licensing, mission, Indian, technology, procurement

I. INTRODUCTION

Our defence industry is now capable of manufacturing wide variety of high-end requirements e.g. Tanks, Armoured vehicles, Fighter aircrafts, Helicopters, warships, Submarines, Missiles, Electronic equipment, Special alloys, special purpose steels, and variety of ammunition. Rapid progress has been made towards achieving complete Aatmanirbharta in the manufacturing of defence equipment required by our Armed Forces within the country. As a result of these initiatives, many State-of-the-art products including 155 mm Artillery Gun system 'Dhanush', Light Combat Aircraft 'Tejas', Surface to Air Missile system 'Akash', Main Battle Tank 'Arjun', T-90 Tank, T-72 Tank, Armoured Personnel Carrier 'BMP-II/IIK', Su-30 MK1, Cheetah Helicopter, Advanced Light Helicopter, Dornier Do-228, High Mobility Trucks, INS Kalvari, INS Khanderi, INS Chennai, Anti-Submarine Warfare Corvette (ASWC), Arjun Armoured Repair and Recovery Vehicle, [1] Bridge Laying Tank, Bi-Modular Charge System (BMCS) for 155 mm Ammunition, Medium Bullet Proof Vehicle (MBPV), Weapon Locating Radar (WLR), Integrated Air Command and Control System (IACCS), Software Defined Radios (SDR), Lakshya Parachute for Pilotless Target Aircraft, Opto Electronic Sights for Battle Tanks, Water Jet Fast Attack Craft, Inshore Patrol Vessel, Offshore Patrol Vessel, Fast Interceptor Boat, Landing Craft Utility, 25 T Tugs, etc. have been produced in the country during the last few years.Further, for the first time, a made-in-India Advanced Towed Artillery Gun (ATAG) howitzer gun developed by our industry was part of the 21-gun salute during the Independence Day celebration at Red Fort in Delhi.[2]

An innovation ecosystem for Defence titled Innovations for Defence Excellence (iDEX) was launched in April 2018 to foster innovation and technology development in Defence and Aerospace by engaging Industries including

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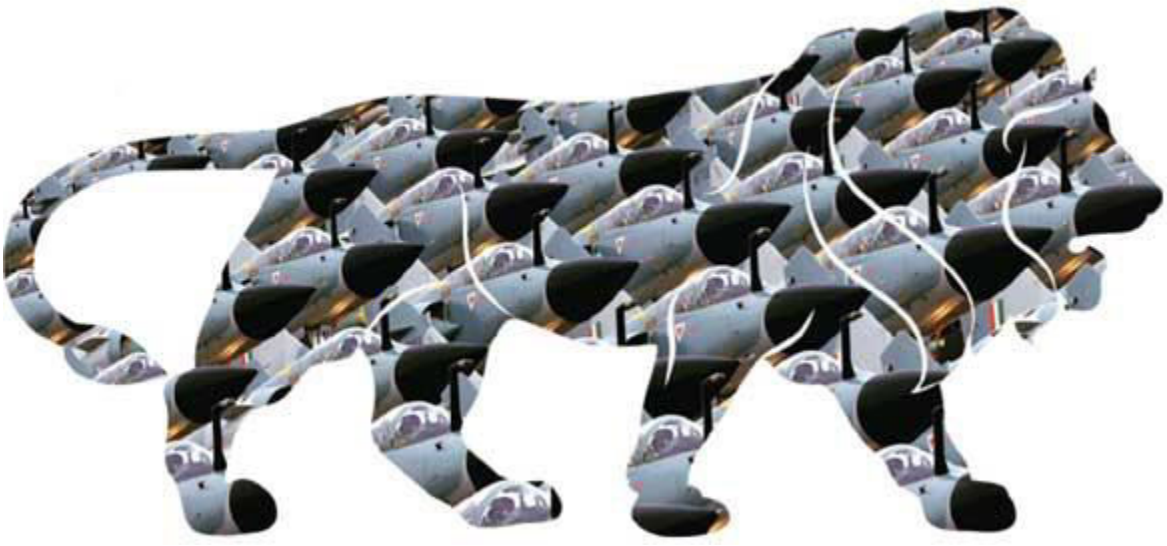
MSMEs, Start-ups, Individual Innovators, R&D institutes and Academia. iDEX provides them grants/funding and other support to carry out innovations/R&D which has potential for future adoption for Indian defence and aerospace needs. Under iDEX, 233 problems have been opened, 310 Start-ups have been engaged, 140 contracts have been signed. 'iDEX Prime' framework under iDEX has been launched in 2022 to support Start-ups with Grant-in-Aid up to Rs 10 crore to enable the development of high-end solutions.Till October 2022, a total of 595 Industrial Licences have been issued to 366 companies operating in Defence Sector.

Government has also established two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu to attract investments in Aerospace & Defence sector and established a comprehensive defence manufacturing ecosystem in the country. Moreover, the respective State Governments have also published their Aerospace & Defence Policies to attract private players as well as foreign companies including Original Equipment Manufacturers (OEMs) in these two corridors. The two State Governments have already signed MoUs/Agreements with various industries for investment worth total value of about Rs 24,000 crore. Investments worth Rs 2,242 crore and Rs 3,847 crore have been made in Uttar Pradesh Defence Industrial Corridor (UPDIC) and Tamil Nadu Defence Industrial Corridor (TNDIC) respectively.[3]

The Government, in the last three years i.e. from 2019-20 to 2021-22 and current year (2022-23 up to September, 2022), has accorded Acceptance of Necessity (AoN) to 163 proposals worth Rs 2,46,989.38 crores approximately, under various categories of Capital procurement which promote domestic manufacturing as per DAP-2020.

The share of domestic procurement in the total procurement has been on an uptrend. In 2018-19, the domestic procurement stood at 54% of the total procurement, this figure jumped to 59% in 2019-20 and to 64% in 2020-21. This year it has been increased to 68% for domestic procurement, of this 25% budget has been earmarked for procurement from private industry.

With focus of Government on indigenisation and procurement of defence products from the domestic resources, the expenditure on defence procurement from foreign sources has reduced from 46% to 36% in the last four years i.e. from 2018-19 to 2021-22.[4]



On May 31, 2017, in a major policy reform intended to promote 'Make in India' in defence manufacturing, the Ministry of Defence (MoD) announced the much-anticipated Strategic Partnership model for the Indian private sector. The model, whose concept was first suggested by the Dhirendra Singh Committee in its July 2015 Report,

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populates Chapter VII of the Defence Procurement Procedure 2016 (DPP 2016).

II. DISCUSSION

For a few years now, the Ministry of Defence has tried to boost the 'Make in India' policy in defence manufacturing. Yet, the growth of defence manufacturing has been slow and the domestic industry has struggled to manufacture high-technology weapons and equipment.[1] In the wake of its new Atma Nirbhar Bharat policy, and the border clash between Indian and Chinese soldiers at the Galwan valley, India renewed its pursuit of self-reliance. Several new measures were announced by the Ministry to make India self-reliant in defence production:

(i) Import embargo on defence equipment: The Ministry of Defence recently took a decision to introduce an import embargo on 101 defence equipment to be implemented progressively until 2024.[2] This to apprise the Indian defence industry of the anticipated needs of the Armed Forces' future needs to encourage indigenous manufacturing. The list comprises of simple parts, and high-technology weapons such as artillery guns, assault rifles, corvettes, sonar systems, transport aircrafts, light combat helicopters, radars, among others.[3] The Army and Navy have placed wheeled armoured fighting vehicles and submarines, respectively, on the list with an indicative import embargo from December 2021.[4] Similarly, the Air Force has listed light combat aircraft LCA MK 1A with an indicative import embargo from December 2020. Following this decision by the Ministry, the Defence Research and Development Organization released another list of 108 systems and subsystems which will be designed and developed by the Indian defence industry 2020 onwards.[5] DRDO will also provide support to the domestic industries including Medium, Small and Micro Enterprises (MSMEs) to design, develop and test the systems. [5]

(ii) 74% FDI in defence production: The Department for Promotion of Industry and Internal Trade, in a September, 2020 Press Note, increased the Foreign Direct Investment in the defence sector from 49% to 74% under the automatic route.[6] The decision to increase FDI in the defence sector was taken by the government to increase domestic defence production, development new technology in India and maximise expansion of private sector in defence production.[7]

(iii) Capital procurement budget: For the year 2020-2021, the Ministry has created a separate budget head for domestic capital procurement and has allocated a budget of INR 52,000 crore for domestic procurement.[8] Earlier, the capital procurement budget comprised of both domestic as well as foreign procurement. According to the government, this move will reduce the defence import bill and encourage domestic manufacturing of defence equipment.[9]

(iv) Defence Acquisition Procedure 2020: The Defence Acquisition Procedure (DAP) 2020 has increased the indigenous content requirement in all categories of defence procurement.[10] The DAP 2020 has also proposed other measures to increase indigenisation such as increase in indigenous availability of high-end military materials, the use of indigenous software in equipment/systems and a boost to innovation by start-ups and Micro, Small and Medium Enterprises (MSMEs). For a discussion on the changes introduced in the DAP 2020

Challenges to achieving self-reliance

While the industry stakeholders welcomed these new measures, the domestic defence industry faces several challenges which hinders India's pursuit of self-reliance in defence manufacturing. These challenges are:

Lack of growth in defence modernisation and defence capabilities [6]

Over the years, the pace of defence modernisation in India has remained slow and indigenous production of high-tech weapons continues to be a challenge.[11] This is mainly due to a (a) declining defence budget towards long term

investments, and research and development; (b) process inefficiencies and delays in domestic production by government lead organizations; (c) and the government's reluctance to grant defence contracts to India's private sector.[12] For instance, so far, the only major contract granted to India's private sector is the INR 4,500 crore deal with Larsen & Tourbo to supply specific artillery systems.[13] As a result, India continues to rely on foreign imports for high-tech weapons, thereby hindering the development of the indigenous industry.[14]

Budgetary issues

A lack of capital expenditure on domestic defence production, and research and development has been a major obstacle to India's self-reliance goals. While India's defence budget has increased over the years, a major chunk is spent on personnel costs such as salaries and pension, thereby shrinking the funds available for defence production.[15] For instance, of the total defence budget for 2020-2021, 58.6% is allocated for salaries and pensions, whereas only 22.7% has been allocated for capital outlay.[16] While an increase in personnel costs are important, a relative increase in expenditure on defence production is also imminent. Further, India's budget allocation for research and development is only 4% of the total defence budget for 2020-2021. This is much lower compared to capital expenditure by technologically advanced countries like USA and China, which spend 12% and 20% of their defence budgets on research and development, respectively.[17]

Lack of strategic planning for future needs of the Armed Forces

In the emerging geopolitical scenario, the Indian Armed Forces has to remain operationally ready to respond to border threats. Consequently, the Armed Forces' war-fighting capabilities has to be constantly augmented and the technology in the weapons and equipment has to be updated.[18] In order to meet these needs indigenously, there is a need to strategically and pragmatically plan for the needs of the Armed Forces and invest in long-term development of high-tech weapons. Commentators have argued that this is currently lacking in India's defence policy.[19]

Production and time delays

Indigenous defence production has been wrought with production delays. For example, India's first indigenously produced Light Combat Aircraft, HAL Tejas, faced a long production delay with HAL requiring a total of seven years to produce 16 aircrafts despite the estimated timeline of four years.[20] HAL is yet to complete the order for 20 more aircrafts. Even the Defence Research and Development Organisation has come under the scanner for constant delays, poor performance, and inadequate monitoring of its projects. According to a 2018 report by a parliamentary Committee on Estimates, the Defence Research and Development Organisation failed to meet timelines in all 14 mission projects for the Indian Air Force, thereby severely affecting the Air Defence plans of the Air Force.[21]

Hierarchal and skewed decision-making

A 2018 internal report of the Ministry of Defence identified skewed decision-making process, bureaucratic red-tape and multiple decision-making heads as the reason for inordinate delays in defence procurement.[22] Decision-making on issues of national security and defence procurement has been slow and inefficient due to hierarchical complexities, resulting in the slow growth of defence modernisation.[23] In addition, there is a lack of input from the Armed Forces in the decision-making on defence and national security strategy.[24] To offset these criticisms, the Ministry recently created a new role called the Chief of Defence Staff, in the Department of Military Affairs, two decades after it was recommended by the Kargil Committee in 2000.[25] The Chief of Defence Staff will be a single point military advisor to the Ministry of Defence and will synergize the operations of the three forces, but will not be the operational head of the Armed Forces.[26] However, according to industry observers, this may cause friction in the military leadership and risk undermining the authority of the three service chiefs.[27]

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Suggestions for reform

To overcome the challenges identified above and support self-reliance in defence production, the Ministry could consider the following suggestions for reform:

(i) Supporting private sector: To build a defence industrial base, the government should consider supporting the private sector in India and trusting the private sector with bigger and stable defence contracts. Supporting research and development, and design and manufacturing capabilities of the private sector are vital for increasing defence production in India.[28]

(ii) Funds for Armed Forces: Several defence projects are pending due to a lack of funds. The Indian government should consider reviewing the budget allocation for the defence to ensure adequate funds for the three forces relative to personnel costs. In addition, long-term and larger capital investment in the defence production, and research and development are the need of the hour. The government could also consider allowing the Armed Forces to raise their own funds by entering into for-profit public and private sector projects such as repair and maintenance of machinery and aircraft for private companies, building and repairing highways and expressways, among others.[29]

(iii) Decision-making and time delays: To overcome decision-making challenges facing defence procurement, the Ministry of Defence should consider a restructuring of the decision-making process. Representatives from the three forces should be included in defence procurement and national security decision-making for a more inclusive and efficient decision-making. Time delays in defence procurement can also be reduced by making structural changes to the decision-making process. As recommended by the report of the expert committee headed by Indian Institute of Management Professor Pritam Singh, an external organization called the Defence Capital Acquisition Authority should be set up outside the Ministry of Defence to reduce delays and corruption in defence procurement.[30] The organization will be responsible for the entire defence acquisition process including legal, financial, costing and technical, and include experts for each stage. This will drastically reduce the time delays in defence procurement since the organization will combine the functions of several agencies involved in defence procurement including technical and trial evaluation, quality assurance and contract negotiation, among others.[31] Similar model has been adopted by countries such as France, United Kingdom and Australia.[32]

III. RESULTS

As India enters the 21st Century, it is necessary to re-examine the earlier perspectives that dominated our thinking on our security. The Cold War is over and the world is dominated by one power–the United States. That is not likely to change in the foreseeable future though some of the other major powers,[7] China, Russia and France would prefer a poly-centric balance in the international system. India too shares that view. India has declared itself a nuclear weapons state. India has been moving out of the system of centralised planned economy with the public sector playing a dominant role and occupying the commanding heights, towards an increasingly market-oriented one. The process of economic reform dismantling state controls is being steadily pursued, though not at a pace some would prefer. Indian economy has been growing at an average of over five and a half percent and there are reasonable expectations that this growth rate is likely to improve further. India is rated as an attractive emerging market. The poverty in India is steadily coming down though not at a rate most of us would like to see. However, elimination of poverty is now considered to be well in sight.[8] Indian skills in software technology are in demand in US, Germany and other industrialised countries. India is aspiring to become a permanent member of the UN Security Council.[9]

These radically changed circumstances call for a review of our earlier definition of security and defence. Earlier, security was defined in terms of threats to our sovereignty and territorial integrity and defence in terms of our capabilities to counter them. With the establishment and consolidation of the UN system, infringement by one nation

of the territorial integrity of another is not tolerated by the international community except where there are active and ongoing disputes. Violation of territorial status quo is frowned upon generally. The concept of sovereignty too is undergoing changes. Increasingly the international system is progressing towards pooling of sovereignty. The World Trade Organisation and various international arrangements such as the Law of the Seas and environment related agreements are trying to regulate the exercise of national sovereignties. These developments, however, do not mean that there are no more problems of national security. There are and they are now more complicated than before.[10]

Short limited wars are still possible–as happened in the Kargil Sector in 1999. Threat of use of nuclear weapons and attempts at nuclear blackmail are still within the realm of possibility. Wars of intervention in the name of humanitarian considerations happened in Bosnia and Kosovo. Above all, India has been subjected to a prolonged proxy war by its neighbour Pakistan. Trained mercenaries with sophisticated man-portable weaponry are being infiltrated into our country and Pakistan disowns all responsibility for this. Where there are faultlines in any nation because of ethnic, caste and religious differences they are exploited by unfriendly nations to arm the estranged groups to enable them to carry on with low intensity conflicts. Pakistan has been engaged in waging such a conflict first in Punjab, then in J&K and thereafter in the Northeast of India. Above all terrorism, both domestic and transnational has become a major security threat.[11]

Narcotics generation and traffic and organised crime are also potent threats to national security. Both narcotics traffic and organised crime have to be carried on against laws of nations and international law. Consequently, they need to be protected against law enforcement and the contractual obligations within the unlawful activity have to be enforced by use of illegal force. This requires maintenance of unlawfully armed personnel. There are natural affinities between national and international terrorist organisations and organised crime and narcotics traffic. Drug money finances many insurgencies since tying down law enforcement agencies and security services to counter insurgency operations make it easier for organised crime and narcotics traffic to flourish.[12]

Last year at Kargil it was the Indian threat of possible escalation of the limited war to a general war that compelled Pakistani Prime Minister Nawaz Sharif to run to Washington and request President Clinton on a Sunday, 4th of July, the American Independence day, to provide him the fig leaf to cover up the withdrawal of Pakistani Northern Light Infantry from the Kargil heights.

No doubt the nuclear factor operated in preventing further escalation of the Kargil war. But as the American strategists realised in the early sixties when they formulated the doctrine of flexible response, while nuclear weapons deter each other and full scale wars there can always be "salami slicing" especially if the territory is disputed. Therefore, an adversary has to be deterred both at nuclear level and at conventional level. Deterrence in low intensity conflicts, proxy wars and terrorism is very difficult.[13]

Therefore Indian security planning should take into account the whole spectrum of threats from terrorism to nuclear blackmail. Self-reliant defence is feasible only if the nation anticipates the threat well in time and is prepared to meet it in terms of personnel, their training and equipment. Unfortunately in India the system of long term threat assessment and planned preparedness to counter the threat has been very weak and though this country has fought five wars, four of them were on the basis of ad hoc and ready responses, the exception being 1971. At that time the adversary permitted us eight months to prepare and that is not likely to happen every time. Self-reliant defence should aim at equipping the armed forces with the whole range of equipment that would match, if not be superior to those of the adversary. This equipment may come from foreign or domestic sources. If it comes from a foreign source the country should have the capability to maintain it to its full operational effectiveness and should be confident of spares and ammunition support under all conditions. Self-reliance in defence has to be differentiated from self-sufficiency.

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There are perhaps only three countries in the world which are self- sufficient in defence–US, Russia and France. All others obtain varying quantities of their defence equipment from outside. This outside dependence may be by way of outright imports or collaborative production arrangements with other countries. In today's international system it is extremely difficult for India to aim at self-sufficiency in defence equipment and it is more pragmatic to plan for self-reliance. There are always limits to what can be achieved in that respect. The Sea Harrier for our Navy had only a single source–Britain. Now the British are creating difficulties in servicing and repairing the aircraft sent to them, because of their docilely following the US sanctions against India in the wake of the Pokhran tests. Self-reliance therefore calls for very careful selection of supplier and his political trustworthiness.[14]

Though in this country the concepts of self-sufficiency and self-reliance in defence have been bandied about for the last four decades, there has never been the political will to make a concerted effort in that direction. Perhaps upto the eighties such talk was a mere pipe dream. A country which had not designed and produced its own motor cycle or car upto that time could not have designed and produced its own aircraft and tanks. If only the history of our defence effort can be written down, we will be learning from our past mistakes and unfortunately in India we are not history-minded and therefore refuse to learn from our history. In the fifties the collective wisdom of our air force, defence R&D and Ministry of Defence started the HF-24 project for a princely sum of Rs. 1 Crore. We all know what happened to that aircraft development. Subsequently, the same story was repeated for our tanks, our missiles and our Light Combat Aircraft (LCA) project. But that is not something peculiar to our defence. In the fifties there was a lot of talk about our producing the cheapest steel in the world. I do not have to tell you what happened ultimately.[15]

There was no way this country could have escaped reliance on defence imports in the sixties and seventies. Even China was producing most of its equipment on the basis of licenses obtained from the Soviet Union in the fifties. The Indian civil industry was not in a position to help very much. One experience of trying to subcontract parts of a carbine to civil industry did not prove successful in mid '60s. Most of our equipment came from the Soviet Union. They were paid for in non-convertible rupees and compared to world prices for analogous categories of equipment they were very cheap. That was the time when a concerted effort should have been made to get not merely Soviet equipment but the Soviet know-how and know why. As I mentioned earlier, there was no long term defence technology planning. The Services selected particular equipment without giving thought to successive generations of that category of equipment. Once a particular equipment had been bought there was no thinking about what would succeed it some twenty or thirty years thence. Attempts to introduce such planning were resisted since there was strong preference to ad hoc selection of equipment–preferably by import. Even today there is no comprehensive equipment planning which looks at every item in our inventory and decides when it comes to its replacement whether that is to be designed and made in the country, produced in the country under license, partly imported and partly to be license-produced or wholly to be imported. Till such a planning mechanism is in place, it is not realistic to talk about self-reliant defence production.[16]

Defence production in India has its specific problems differentiated from those obtained in civil production. The Indian market for civil production is quite sizeable and India today is a much sought after market in terms of its expansion potential. In terms of defence production the market is largely limited by the size of its armed forces and their demands. Most of the Western countries producing defence goods rely to a significant extent on export markets. In India one often hears of talk of developing export markets. Careful thought would lead to the conclusion that this expectation is largely unrealistic. The US has not only its large armed force but a readily available market among its allies and other nations which look to US directly or indirectly for security support. Such is also the case with France which maintains very strong links with the Francophone countries. Russia as the Soviet Union had a large market for its own forces and also was a supplier to other socialist countries and some of the oil exporting countries. China used to supply arms at one stage at nominal costs but now at prices much lower than those of the Western countries. The major industrial countries add many sweeteners to the arms deals–large scale training programmes, implicit security guarantees in view of their membership in the Security Council and intervention capabilities and plain kickbacks. In these circumstances, the Indian defence production has to rely largely on the Indian market. If it is possible to have collaborative shared production with another country then economy of scale

would improve depending on the combined size of the two markets. Today that happens in Europe and more and more countries are entering into collaborative agreements to produce high cost sophisticated equipment like aircraft and tanks.[17]

Reverting back to our own experience while it was right on our part to have gone in for licensed production of MIG aircraft, frigates, Bofors guns and submarines we have to ask ourselves why we did not absorb the technology and develop capabilities to design the equipment of the successive generation. One part of the answer is that such a planning culture does not exist in our defence establishment and the second part of the answer should be sought in our R&D management culture.

In the Western countries the industry interacts continuously with the defence services and the R&D of the industry comes up with their ideas of next generation equipment, new technologies and innovations that could be incorporated in them. On the basis of their interaction, the qualitative requirements of equipment are drawn up. In their case, they do not have to look over their shoulders to see what others are doing since they are working with the state-of-the-art technologies. In India the development of a new equipment is not of the state-of-the-art because in our equipments development, whether it is a thermo nuclear weapon, missile, aircraft or tank our effort is to catch up with something that already exists elsewhere. Given the stage of evolution of our industrial technology, our R&D capabilities and our defence planning culture this is inevitable and will remain so for the foreseeable future. While in those countries import is not an option in respect of a new generation of equipment to be introduced into the services, in India it is always an option–an attractive option for quite a few decision-makers. In order to prevent such imports and to go in for indigenous development, our R&D attempts to make out a case that they can develop the equipment at a much lower unit cost and with a delay not unacceptable. There is in most cases a deliberate understatement of both costs and time for development and production. Since this is not the state-of-the-art equipment but one that already exists elsewhere the users put together a list of best performance parameters of similar category of equipments that exist elsewhere as the qualitative requirements. In fact, in every equipment some optimisation of performance parameters is inescapable and an equipment with a combination of the best performance parameters of different designs of that category of equipment is just unaffordable in terms of costs. The services knowing this full well still demand it often and the R&D also knowing it full well often promises it.[18]

Since the overall development cost is understated the pace of effort for development is determined by that factor. If a project that would involve Rs. 500 Crores for development is started as a project of Rs. 100 Crores only, then the personnel employed and the intensity of development effort would be that required for the smaller project and not the larger one. The initial understatement of R&D costs dooms a project to large time overrun and the cost overrun is inevitable. Finally, when the development of the prototype is completed, it will not be in a position to meet all the performance characteristics stipulated by the user. Because of the original understatement of costs, the number of proto-types produced are usually limited to a low single digit–often even one or two. If the proto-type gets damaged or destroyed during trials there has to be a long wait for the next prototype to be produced. There are prolonged negotiations between the user and R&D on compromise in performance parameters. Having sunk so much money in development, it is difficult to turn back.

In other countries in any R&D project many subsystems would be available off the shelf. In India at this stage of industrial development every subsystem has to be produced in the country. Sweden designs its Grippen aircraft around an American engine. For India, US and UK are not as dependable suppliers as they are to Sweden. The result of this kind of R&D management approach and constraints on them is that except for 75 mm and 105 mm guns and Prithvi missile the country is yet to see a major complete weapon system developed in the country deployed in service. I am not blaming the R&D alone for this. There is an overall lack of basic grasp of what it takes to develop a self-reliant defence capability.[19]

The Ordnance Factories have been producing equipment, weapons and ammunition under license. Though Rajadhyaksha Committee recommended that they should have some R&D capability for product improvement that

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has not happened to any significant extent. They are not the most efficient organisations except when the country is at war when their productivity rises to match their patriotic feelings. Since there is no long term institutionalised planning of defence production and there are no exports there is always a sense of insecurity among the labour about retrenchment after the production run of a category of equipment is completed. When a new weapon is introduced the total requirements of the army should be met within a few years so that all units can have standardised equipment and ammunition upto authorised reserves should also be produced within the matching period. Therefore, the orders in respect of such equipment and ammunition cannot be at a steady rate over a long period of time. In the period of reequipment with a new weapon and build up of reserves, stockpiles orders will be for full capacity of the production establishment. Thereafter, there will be a long period of lean orders unless there is a security crisis or export orders. This cycle will be repeated when the next generation of weapons and ammunition is to be introduced. It is this lack of steady orders and at the same time the need to keep the production capacity live for crisis situations which make the production of weapons and ammunition an unattractive proposition for civilian industry. One way of overcoming it is to develop a dual capability to make use of the production assets with some additional machinery to produce civilian goods so that during the lean period the labour force and the capacity can be used to produce civilian goods. This is done by many countries of the world. Unfortunately, this is not being done in this country. In the US, there is a system of Government owning the facilities and a contractor operating it for a period of time to produce the weapons and ammunition stockpiles as per requirement and then ceasing production. Such a system requires involvement of private sector industry on a large scale[20].

Whatever may have been the justification to have ordnance factories for clothing, general stores and automobile vehicles in the second world war period and in the first thirty years of independent India, at the present stage of industrialisation of the country there is no longer any justification for the Government to do things which can be done more efficiently and economically in the private sector. Most of the expansion in these sectors took place between 1963-70. Most of those recruited at that time are retiring and there should be a strategy to run down that labour force and put these assets to alternative and more productive uses.

India today is not the India of '50s and '60s when there was no alternative to defence production having to be undertaken by public sector for want of capital and skills. The country has given up centralised command planning and is increasingly relying on market economy. Disinvestment in public sector is being actively espoused–though not at the pace at which it should be done. Information technology and electronics–two areas which are likely to play a significant role in future defence equipment are today dominated by private sector. So also the engineering industry. Therefore a time has come to reexamine the basis on which our defence production capabilities have been built up and to evaluate whether our future defence production strategy can be an extrapolation of our past line of development.

The weapon development today is driven by R&D and that is resulting in a range of weapon delivery systems and smart weapons that are contributing to the revolution in military affairs (RMA). The destructive efficiency of weapons have been improved by two or three orders of magnitude. The cost of development of weapons systems have skyrocketed and the number of systems required to inflict the same degree of damage has dramatically declined. Therefore, most of the armament firms in the West have sought mergers to expand their R&D base, to spread the risks involved in high development costs and also to diversify their production. These mergers have been in some cases across national borders. There are also technology control regimes agreed to by most of the industrialised countries whose objective is to deny sophisticated weapon technologies to countries outside the North Atlantic Treaty Organisation (NATO) and their close allies in East Asia. More and more of the new weapon systems are going to be guided by space based monitoring and guidance systems. Similarly in dealing with proxy war and terrorism too sophisticated monitoring systems play a crucial role. In future, the country has to develop measures to defend itself against cyber attacks as well. In such circumstances, it is unrealistic to think of defence production department as the sole agency to equip the country.[21]

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At present our defence planning focuses on listing out what equipment and weapon systems the forces would need in the next ten or fifteen years. So also some technological visionaries have enumerated areas in which our technological capabilities should be exercised. But hardly any thought has been given to how this country should prepare itself industrially to equip itself to be self-reliant in defence 15 to 20 years from now. That should be the crux of our defence planning, but unfortunately it is not.

From what has been said it should be obvious that industry in private sector which will be the dominant sector has to play a crucial role in future defence self-reliance. At present, our private industry's expectations are by and large in terms of subcontracts for materials, components and subsystems, the lead coming from the defence production establishments. That may have to be a necessary first step but we have to plan for our private sector playing a role in producing complete equipment systems in future especially in areas so far not covered by our present defence production establishments. For that purpose the private industry has got to be prepared and in turn they have to prepare themselves.[22]

First of all, the country has to realise that our industry capabilities have not reached such a stage and our R&D base is not yet sufficiently developed for us to aim attempting to develop all our defence requirements in this country. We have to rely on licensed production in a large number of cases. Secondly, there are advantages in seeking collaborative ventures with armaments firms abroad in which our skills can make useful contribution in terms of cost reduction to the foreign manufacturer of main equipment. Thirdly, in respect of new equipment to be license produced in the country, the private sector should be encouraged to participate in its production. Initially, it can be in terms of a joint venture between defence and private sectors with progressive disengagement by the government. Fourthly, the private sector ventures which are involved in information and electronics technologies which come close to dual use technological capabilities should be identified and their potential to enter into defence related production should be explored. Such of those industries willing to do so should be encouraged to do so. While the Government should undertake this exercise in collaboration with the private sector, the latter should do some heart-searching about what it is doing to promote R&D.[23]

Today India is just beginning to have indigenously designed cars and scooters. South Korea which started its industrialisation after India can boast of more indigenously designed products than this country. Our culture has essentially been to produce under license and when a new successor product appears, to go in again for licensed production. This culture permeated both our public and private sectors. There may be many explanations for it: the Hindu growth rate may be one, the market not being large enough to justify R&D investments and the country's economic management not being export-oriented. Unless our industry embraces a R&D oriented philosophy the role it can play in the defence sector will not be different from what defence production units have so far done. This is the first prerequisite. Many multinationals are now using cheap Indian skills and the communication connectivity to cut costs in terms of record keeping and other services such as airlines ticketing. Our industry should explore the possibilities of producing components, parts and even subsystems for armament manufacturers in the industrialised world and to enter into joint collaboration with them.[24]

In the history of this country in two areas, there were purpose-oriented missions to absorb technology–atomic energy and space. Both of them were successful though atomic energy ran into difficulties because of the technological barriers erected after Pokhran-I test. Those missions were done when our private sector industry did not have adequate capabilities and therefore had to be undertaken by the Government. Now the country has to plan for a technology mission of absorbing the latest defence technology across the whole spectrum. This cannot be done by a single department but needs to be attempted by a whole range of industries and through the mechanism of indicative planning undertaken by the Government.

Long ago on the day of Indian counter attack on Lahore on September 6, 1965, Prime Minister Lal Bahadur Shastri directed that the Planning Commission should give a defence orientation to the national plan. As happens in many cases in this country, reports were produced, meetings were held but after two years the issue receded into the

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background and nothing changed. Promotion and absorption of technology needed for our future defence needs and involving our private sector and enabling it to play its due and effective role should be a major task for our national security council and the Planning Commission besides the Department of Defence Production.[25]

Our industrial community has not displayed as much interest in matters of national security, international security and international relations as the business community in the advanced industrial countries have done. There are associations of businessmen in the US for example, Business Executives for National Security which devote themselves to this task. The US Business provides significant portions of the funding for various think-tanks engaged in national security studies. I can recall in the sixties Herman Kahn used to hold two-three day sessions for business executives on nuclear strategy. I am not suggesting that India should follow the US model. But there must be clear realisation among our industrial community that if there are terrorist attacks like the ones we had in March, 1993 in Mumbai, the foreign investment inflows will be affected. The country's industrial growth is linked up with its sense of security and those who want to hurt this country would attempt to hurt it economically through proxy wars and terrorism. The businessmen in other countries get themselves briefed on their country's foreign and security policies when they go abroad. Many of our businessmen would have heard their US counterparts preaching nonproliferation in line with US Government policy. In our country neither the Government takes the initiative nor does the business community take steps to get itself briefed adequately. In future, for the business community national security cannot be of just passing interest. It should be intimately involved and show itself to be so.[26]

Lest I should be accused of attempting to create an Indian clone of the American military industrial complex let me clarify that there is absolutely no risk of that. Military industrial complexes are possible only in superpowers with global military capabilities which are also engaged in vast exports of military equipment. India must have an aggressive foreign policy and security policy at global level before there can be a military industrial complex. There is no chance of India becoming such a power in the foreseeable future. If all goes well, we may turn out to be sixth in the global power rating some years from now and we shall be constrained by the global balance of power with five powers equal or superior to India. The steps I am advocating will only enable India to modernise its defence and give it a capability to be one of the global players. Nothing more. At the outset, I had excluded the possibility of India acquiring any slice of the global pie of arms exports.

If the Indian industry in the private sector is interested in the defence industry and in playing the role which is its due then the industry should also start linking up with and supporting research in universities and laboratories. One of the strongest Indian assets has been our IITs. The alumni of the IITs have played a significant role in the US high tech industries including those in their defence sector. The desirability of increasing the IITs both to step up our links with world technology as well as to provide for our expanded needs will have to be considered. In doing this both our own industry and the NRIs have a role to play.[27]

The above analysis would suggest that the following action needs to be urgently taken if India wants to become self-reliant in defence in the next two decades:

The National Security Council should issue an advice to all concerned ministries and the Planning Commission that planning for defence preparedness must focus not only on men, materials procurement and infrastructure but on industrial preparedness to meet long term future challenges. Long ago, Jawaharlal Nehru talked on equation of defence. According to him, defence was a sum of armed forces, industry of the nation and spirit of the people. Like many other things he said it was not followed up.

To spread consciousness about the industrial preparedness of the country among the armed forces a defence industrial college should be set up on the model of Industrial War College of the National Defence University in the US. That should run courses for middle and senior level personnel in the armed forces, civilian officials and

managers in private industries. There should be a think-tank attached to it which would generate literature on the subject.[28]

The defence planning process in this country as already mentioned, is very weak and more a formal exercise than a serious decision-making process. Any worthwhile defence planning has to be preceded by a long term assessment of future security scenarios including technology development. The Kargil report brings out that neither at political nor at bureaucratic levels including the senior levels of the armed forces has there been appreciation for the need for long range assessments. This is because with rare exceptions most of our political and bureaucratic leadership do not subscribe to disciplined and structured decision-making and they usually revel in ad hoc ist decisions mostly influenced by very short term parochial considerations. There is no collegiate decision-making culture within the services nor collective decision-making at political level. For these reasons the planning process in this country has not been as fruitful as it was expected to be. This is true of both developmental planning and security planning.

A small planning staff has been functioning under Director General (Defence Planning Staff). That concerns itself more with force levels and equipment requirements in the near term future and not with long term industrial preparedness planning. On the defence production side the Ordnance factories fulfil orders placed with them on the basis of licensed manufacture. The appropriate role for Defence Research and Development Organisation (DRDO) is to concentrate on R&D, change the R&D management culture it has so far practised and improve its credibility vis-à-vis the users on its ability to deliver on time. Therefore, there is an imperative need to create a long range indicative planning mechanism for defence industrial preparedness and to promote an increasing role for civilian industry, especially the hitech one. This mechanism can be located in Department of Defence Production or even in the Planning Commission. One of the millstones around the economy's neck inherited from the fifties was the artificial bureaucratic and counter productive division of plan and non-plan categorisation. That has led to creation of assets in the name of planning and the subsequent neglect of maintenance on the ground that non-plan expenditure should be curtailed. The country has been conditioned by a culture of neglect of maintenance in all spheres and at every level. This needs to be rectified.[29]

It is extremely unlikely that there will be proactive and long range thinking on the part of the Government at political and bureaucratic level to create such a planning and promotional mechanism. Consequently, it is upto the civilian industry in private sector to seize the initiative and lobby hard with the Government to bring about this development. To do this effectively the industrial community has to educate itself. This could start even with the Centre for Advanced Strategic Studies, Pune, National Institute for Advanced Studies, Bangalore, Institute for Defence Studies and Analyses, New Delhi or even as a joint project involving all three organisations. The associations of Industries–Confederation of Indian Industries (CII), Federation of Indian Chambers of Commerce & Industries (FICCI) and Associated Chambers of Commerce & Industry of India (ASSOCHAM) can commission a task force involving these institutions, to come up with a comprehensive study on the steps needed for the country to reach defence self-reliance in the next 20 years and the role of private sector in it. There should be conferences and seminars involving the business community, service and civilian officials who had held high positions in the services, defence production and R&D, both defence and civil to familiarise the industry in private sector of the problems the country faces, the opportunities that are available and the imperative of the industry being enabled to play a crucial role in future defence production.[30]

The industry in private sector should also probe the possibilities of having joint venture arrangements with defence industries in foreign countries for coproduction of new defence equipment. Since, till now only the defence production establishments have negotiated license production arrangements with foreign countries so it may be necessary in the initial stages to have a three way tie up of foreign defence firm, one of the defence production establishments and a private sector industry. This should be explored especially in cases where additional investments are necessary. The defence production establishments themselves have had little experience of co-production arrangements so far. This will be possible in cases where the Indian industry can offer signficant cost reductions in production of components, parts and subsystems.

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The civilian industry in private sector may adopt the attitude that why should they bother about this effort if there is so much trouble involved in getting into this field. There are very sound reasons why the civil industry should take the extra trouble and get involved. A secure and united India free from threats of proxy war and terrorism is good for an expanding market and will create confidence for the inflow of foreign capital and will facilitate the integration of India in the global market. The new threats that could endanger legitimate economic activity are organised crime, proxy war and terrorism. They may take the form of cyber terrorism, extortion, and commodity terrorism. The kind of equipment needed to deal with such threats will also be needed for defence. Many of the defence equipments involve high technology capable of dual use. Therefore, it will not be in the interest of industry to be indifferent to the needs of our security.[31]

IV. CONCLUSIONS

A lot of people in the country are not aware that the defence sector of India used to be very strong, even before independence. At the time of independence, there were 18 ordnance factories in the country where different types of military equipment including artillery guns were made. We were an important defence equipment supplier during World War II. Our Howitzers and machine guns made at the Ishapore Rifle Factory were considered the best at that time. We used to export a lot. But what led us to become the world's biggest importer in this field? If we look back, the First and the Second World War caused a lot of destruction. Major countries of the world were hit by many crises, but they tried to turn those crises into opportunities. To capture a huge global market, they found a way in the manufacture of armaments as an approach towards the wars. They became manufacturers and big suppliers in the world of defence. Even though they suffered in the wars, but they found a new way out. We also faced a huge crisis during the Corona period. We were at the bottom as far as arrangements were concerned. We did not have PPE kits, vaccines were a far-fetched dream. But exactly like the countries that created an opportunity from the First and Second World War and paved a way towards becoming major defence powers, India also did everything which never happened before, like developing vaccines and other equipment during the Corona period. I am giving you an example because it is not that we don't have potential or talent. It is also not wise to equip our soldiers with the same weapons which soldiers of ten other countries have. Maybe they have better talent, they have good training, or they make better use of those weapons. But for how long will I keep taking the risk? Why would my young soldier carry the same weapons? He must have the weapons which he had not even imagined. This temperament is not just to prepare soldiers, but it also depends on what kinds of weapons are given to him. And that's why Aatma Nirbhar Bharat is not just an economic activity; we need to change it completely.[30]

We have to pay attention to another important aspect for the protection of our country. We also have to intensify our war against forces challenging India's self-confidence and self-reliance. As India is establishing itself on the global stage, there are constant attacks through misinformation, disinformation, etc. [31] Information has also been made a weapon. Keeping faith in ourselves, we have to thwart every effort of the forces that are harming India's interests, be it in the country or abroad. National defence is no longer limited to borders, but is much broader. Therefore, it is equally necessary to make every citizen aware of it. वयं राष्ट्रे जागृयाम (we should be alert in the interest of the nation) -- this assertion should reach the masses. It is also necessary. Just as we are moving forward with the whole of the government approach for 'Aatma Nirbhar Bharat', similarly the whole of the nation approach is the need of the hour for the defence of the nation. This collective national consciousness of the people of India is the strong basis of security and prosperity. [32]

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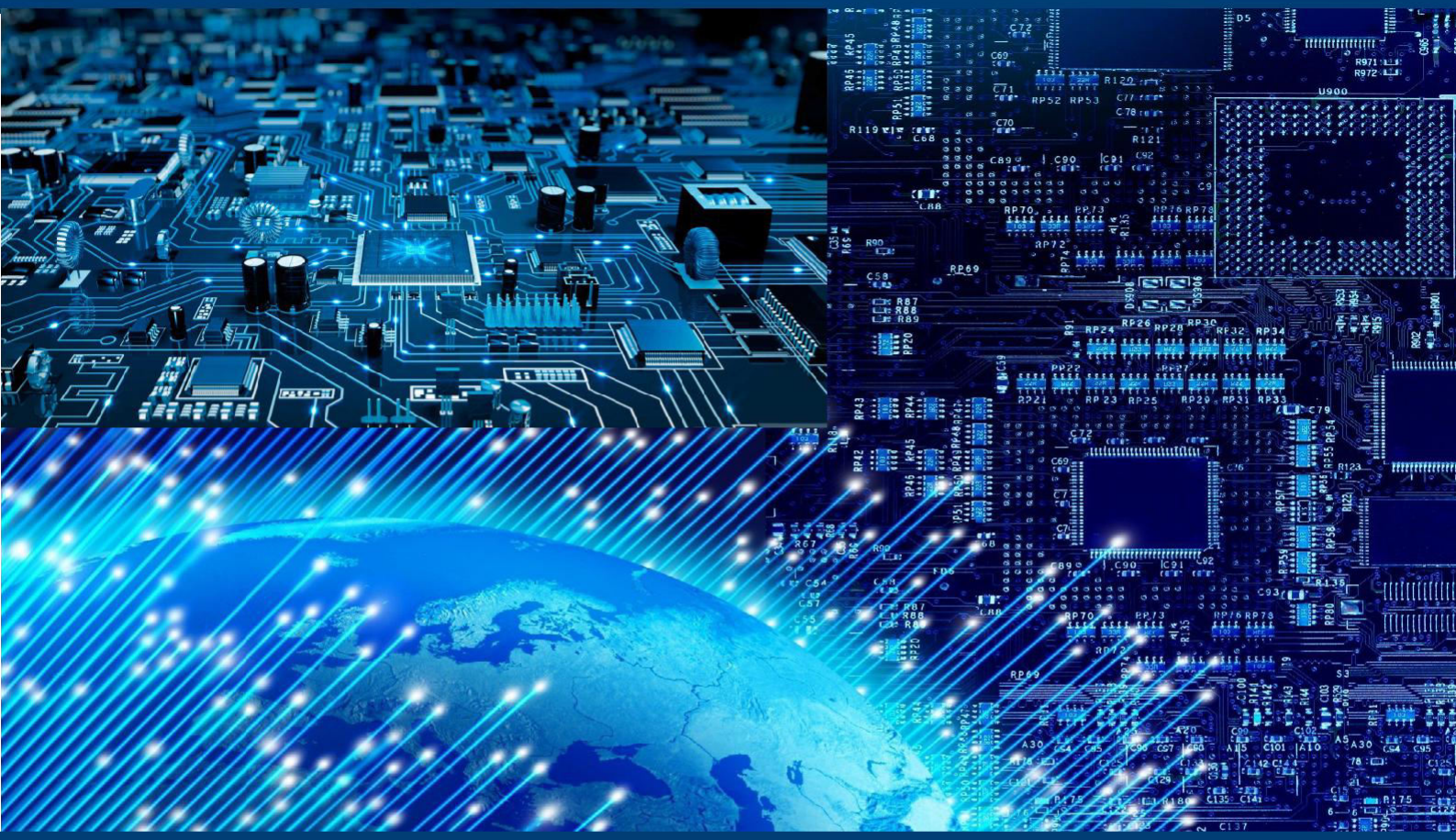

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