

MAKE IN INDIA:

RELEVANCE AND EFFECTIVENESS IN INDIAN ARMY

**A dissertation submitted to the Indian Institute of Public Administration (IIPA),
New Delhi for the degree of Master's Diploma in Public Administration
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MAKE IN INDIA:

RELEVANCE AND EFFECTIVENESS IN INDIAN ARMY



INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

NEW DELHI

CERTIFICATE

I have the pleasure to certify that Brigadier Lalit Kapoor has pursued his research work and prepared the present dissertation titled “*Make in India: Relevance and Effectiveness in Indian Army*” under my guidance and supervision. The dissertation is the result of his own research and to the best of my knowledge, no part of it has earlier comprised any other monograph, dissertation or book. This is being submitted to the Panjab University for the degree of **Master of Philosophy in Social Sciences** in partial fulfillment of the requirement for the Advanced Professional Programme in Public Administration (APPPA) of Indian Institute of Public Administration (IIPA), New Delhi.

I recommend that the dissertation of Brigadier Lalit Kapoor is worthy for the consideration for the award of M.Phil degree by Panjab University, Chandigarh.

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List of Abbreviations

1.	ADB	-	Army Design Bureau
2.	ADG	-	Additional Director/ Directorate General
3.	AHSP	-	Authority Holding Sealed Particulars
4.	ALH	-	Advanced Light Helicopter
5.	AM(LS)	-	Acquisition Manager (Land Systems)
6.	AoN	-	Acceptance of Necessity
7.	AoT	-	Absorption of Technology
8.	ASSOCHAM	-	The Associated Chambers of Commerce and Industry of India
9.	BDL	-	Bharat Dynamics Ltd
10.	BEL	-	Bharat Electronics Ltd
11.	BEML	-	Bharat Earth Movers Ltd
12.	B&M	-	Buy and Make (route in the DPP)
13.	B&M(I)	-	Buy and Make (Indigenous) (route in the DPP)
14.	CAG	-	Comptroller and Auditor General of India
15.	CAPEX	-	Capital Expenditure/ Expense
16.	CPSE	-	Central Public Sector Enterprise
17.	CII	-	Confederation of Indian Industries
18.	CKD	-	Completely Knocked Down (kits)
19.	CNC	-	Contract Negotiation Committee
20.	CToT	-	Complete Transfer of Technology
21.	DAA	-	Defence Acquisition Agency
22.	DAC	-	Defence Acquisition Council

23.	DARPA	-	Defence Advanced Research Projects Agency
24.	DDP	-	Department of Defence Production
25.	DG	-	Director/ Directorate General
26.	DG EME	-	Director / Directorate General of EME
27.	DG QA	-	Directorate General of Quality Assurance
28.	DG PP	-	Directorate General of Perspective Planning
29.	DG WE	-	Directorate General of Weapons and Equipment
30.	DIB	-	Defence Industrial Base
31.	DoI	-	Department of Indigenisation
32.	DPB	-	Defence Production Board
33.	DPP	-	Defence Procurement Procedure
34.	DPrP	-	Defence Production Policy (Indian)
35.	DPSU	-	Defence Public Sector Undertaking
36.	DQA	-	Directorate of Quality Assurance
37.	DRDO	-	Defence Research and Development Organisation
38.	EME	-	Electronics and Mechanical Engineers
39.	FDI	-	Foreign Direct Investment
40.	FF	-	Fully Formed (systems)
41.	FMS	-	Foreign Military Sales (US)
42.	FICCI	-	Federation of Indian Chambers of Commerce & Industry
43.	G2G	-	Government to government
44.	GoI	-	Government of India
45.	GSQR	-	General Staff Qualitative Requirements
46.	IA	-	Indian Army
47.	IAF	-	Indian Air Force

48.	IC	-	Indigenous Content
49.	IDDM	-	Indigenous Designed, Developed and Manufactured
50.	IDSA	-	Institute for Defence Studies and Analyses
51.	IGMDP	-	Integrated Guided Missile Development Programme
52.	IL	-	Industrial Licence
53.	IM	-	Indigenous manufacture (kits)
54.	IN	-	Indian Navy
55.	IOP	-	Indian Offset Partner
56.	IP	-	Intellectual Property
57.	IPR	-	Intellectual Property Right
58.	ISRO	-	Indian Space Research Organisation
59.	JV	-	Joint Venture
60.	LC	-	Letter of Credit
61.	LLTR	-	Light-weight Long-range Transportable Radar
62.	LM	-	Licensed Manufacture
63.	LP	-	Licensed Production
64.	LRSAM	-	Long Range Surface to Air Missiles
65.	MBT	-	Main Battle Tank
66.	MGO	-	Master General of Ordnance
67.	MoD	-	Ministry of Defence (Indian)
68.	MSME	-	Medium, Small and Micro Enterprises
69.	MToT	-	Maintenance ToT
70.	No(s)	-	Number(s)
71.	OFB	-	Ordnance Factories Board

72.	OFs	-	Ordnance Factories
73.	OEM	-	Original Equipment Manufacturer
74.	PA	-	Production Agency
75.	PSU	-	Public Sector Undertaking
76.	QR	-	Qualitative Requirements
77.	R&D	-	Research and Development
78.	RFI	-	Request For Information
79.	RFP	-	Request For Proposal
80.	RoI	-	Return on Investment
81.	SCAP	-	Services Capital Acquisition Plan
82.	Ser No	-	Serial No
83.	SHQ	-	Service Headquarters
84.	SIPRI	-	Stockholm International Peace Research Institute
85.	SKD	-	Semi-Knocked Down (kits)
86.	SP	-	Strategic Partner
87.	SQAE	-	Senior Quality Assurance Establishment
88.	SQR	-	Services Qualitative Requirements
89.	SRI	-	Self-Reliance Index
90.	TM(LS)	-	Technical Manager (Land Systems)
91.	ToT	-	Transfer of Technology
92.	TPCR	-	Technology Perspective and Capability Roadmap
93.	USIBC	-	US India Business Council
94.	WTO	-	World Trade Organisation

EXECUTIVE SUMMARY

1. **Make in India.** The ‘Make in India’ initiative *per se* was launched on 25 Sep 2014, covering 25 sectors (including defence manufacturing) of the economy. This can be termed as the current phase of Swadeshi movement. A major drawback of the Nehruvian economics, pointed out by a young economist Manmohan Singh (later on the Prime Minister of India from 2004-2014) in 1950s, was that it lacked export orientation. The current initiative of ‘*Make in India*’ overcomes this drawback, as stated in the current Prime Minister, Shri Narendra Modi’s introduction of his vision on ‘*Make in India*’, to the public, “***Come make in India, Sell anywhere, (but) Make in India***”.

2. **Statement of the Problem.** It has been five years plus since Sep 2014, when ‘*Make in India*’ initiative was launched. Towards its defence oriented needs, India has been amongst the top two importers in the world for almost a decade and a half now. Among the 25 sectors identified, for ‘*Make in India*’, defence manufacturing was one. Manufacturing of products that are based on state of the art technology and competitive pricing can only happen when the R&D behind the product is world class. Indian Army (IA) is a major importer of its warlike equipment requirements. While Defence Research and Development organization (DRDO), in existence since 1958, the Defence Public Sector Undertakings (DPSUs) and Ordnance Factories (OFs) have been catering to certain requirements of IA, however, the Hi-tech requirements, major weapon platforms and the life time support for them is still ex-import. Not only is this detrimental to the national security concerns, by making India remain dependent on other countries but also is a huge drain on the exchequer and inhibits indigenous skill enhancement and job creation. It is also a well understood fact that

the requirements of IA are typical and unique and these cannot be subjected to free market enterprise. The manufacturing and quality assurance has to be of top class to be able to withstand the rigours of the usage of weapon and equipment by IA. Thus, the necessity for world class R&D and world class product. Hithertofore, but for missile technology, neither the public nor the private sectors in India have been able to meet the desired ends. In this perspective, a positively driven, output oriented '*Make in India*' has immense relevance in IA.

3. **Research Questions.** Based on the defined objectives, the research has attempted to answer the following questions:-

- (a) What all sectors of army requirements is the private industry working upon?
- (b) What are the army related technologies that the DRDO is working upon now?
- (c) What has been the improvement in indigenization through the amended Defence Procurement procedure (DPP)?
- (d) Will the Government give up the policy of 'No Cost No Commitment' (NCNC) and promote Public Private Partnership (PPP) towards R&D in weapons and equipment technology?
- (e) Will the defence PSUs shift towards equipment manufacturing from equipment integration?
- (f) Will '*Make for India*' be more relevant vis a vis '*Make in India*' as far as army weapons and equipment requirements are concerned?
- (g) Where, when and how will the indigenization in army help towards the GoI goal of becoming Net Exporter from Net Importer?

4. **Stakeholders.** The stakeholders in the process of ‘*Make in India*’ for IA are Government of India (GoI)/ Ministry of Defence (MoD), DRDO, DPSUs, OFB/ OFs, Private Industry, Foreign defence industry (MNCs) and IA.
5. **Defence Needs Post Independence.** Owing to policy constraints, the Indian governments for nearly six decades post independence were averse to letting the private entrepreneurship take plunge into the defence industry. India did not believe in export of weapons. Consequently, India remained dependent on the imports for its major weapon system needs and kept harbouring the DPSUs for taking over transfer of technology (ToT) and produce “copy-paste”.
6. **Inferences.** Various inferences derived from the research are as follows:-
 - (a) **Inputs on Technology and Weapons/ Equipment Requirements for IA.** All stakeholders in ‘*Make in India*’, are well aware of the requirements of IA for the next 10-12 years including individual items and the embedded technologies required therein through the Technology Perspective and Capability Roadmap (TPCRs- 2013 and 2018) documents, promulgated on the MoD website (public domain), thus ensuring the desired level of transparency and level playing field for the entire industry.
 - (b) **Proactive DRDO.** DRDO has realised that its hegemony in defence R&D stands challenged, hence, the mantra, ‘perform or perish’. While DRDO has amended its policies and procedures towards a much more proactive outlook but the implementation on ground should also follow suit for all concerned to witness and acknowledge.
 - (c) **R&D Budgets.** OFB and DPSUs have confirmed that the allocation towards R&D has been greatly enhanced, however, the domestic industry is not forthcoming to make any commitment on the R&D budgets.

Various aspects including lack of GoI/ MoD assurances towards helping monetize the expenditure on R&D, non-sharing of expenditure on R&D by GoI/ MoD, failure of MAKE 1 projects during the past decade plus, sheer lack of CapEx capability and inability to compete with MNCs on level playing field have emerged as reasons for the domestic defence manufacturers not going all out towards indigenization through home grown R&D.

(d) **CAPEX in IA.** Despite huge impetus to '*Make in India*' in defence/ IA, by GoI/ MoD, the expenditure pattern over the past six FY, is not indicative of a change in trend or a major thrust towards the stated goals.

(e) **Collaborative Effort.** It is realised that owing to the nature of business involved in '*Make in India*', for IA, a complimentary and collaborative approach has to be arrived at with the participation of all stake holders. So that the entire process becomes a Win-Win for all.

(f) There is simply no one single factor which if improved can resolve the quandary that '*Make in India*' for IA, is presently, in.

(g) While DPSUs have become integrators in big way over the years, it is the domestic private industry which is also too following the same path. This approach has to be challenged and path to true '*Make in India*' (self reliance through indigenization) has to be adopted through the desired CAPEX into core R&D. A road map for these needs to be drawn, involving all stake holders, to be duly monitored through independent accredited agencies.

(h) '*Make for India*' is an interim measure and is certainly not the goal towards self reliance. It is '*Make in India*' all the way, and all concerned need to focus only towards this aspect, through a roadmap.

- (j) Private industry has to be given the necessary assurances. At the same time the DPSUs and OFB have to be made competitive.
- (k) DPP is an enabler towards the stated goal of self reliance through '*Make in India*'. The industry bodies like CII, FICCI, ASSOCHAM should project for realistic amendments in the DPP 2020 which is on the anvil.
- (l) The realisation has set in that the reforms to the DPP in the right earnest can happen through an incremental approach and not through a transformational approach owing to several systemic and ecosystem based shortcomings. '*Make in India*' for IA is still at least a decade away in the right earnest. In this interim period enabling changes have to be instituted by all stake holders.
- (m) Exports can happen if the indigenisation of defence products is of world class standards and if the IA accepts the products and exploits them first, to satisfaction.
- (n) The implementers of the DPP have to be domain experts who should not only understand the processes through On the Job Training (OJT) but also should be formally trained to undertake the tasks assigned with indigenization, '*Make in India*' for IA.
- (o) There is scope to make the processes further simplified through a single window methodology where in the organization dedicated to the modernization, indigenization processes of IA and weapons platform requirements should be independent of the service HQs so that it has more flexibility to interact with stake holders including industry representatives without fearing the wrath of regulators.

7. **Recommendations.** Consolidated recommendations arrived at are, as under:-

(a) **Defence Acquisition Organisation (DAO).** First and foremost the complex structure dealing with acquisition in IA, with several verticals independent of each other, though all under MoD, need to be streamlined into an autonomous entity which can be called DAO comprising AM(LS), TM(LS), DG WE, MGO's Branch, QA, R&D, ADB, DOI and DDP. The organization should have a dedicated interactive window with the industry with all associated personnel as domain experts. The current trust deficit between the stakeholders needs to be mitigated and overcome.

(b) **Financial Aspects.** Indian is a growing economy with a clout and hence should not be satisfied with Buyer – Seller or Patron – Client relationships. India needs to exploit the advantage of buyer`s clout. At the same time ‘Procurement’ and ‘*Make in India*’ should be segregated as under:-

- (i) Acquisition/ procurements in the immediate future.
- (ii) Graduated ‘*Make in India*’ as per road map. Long term projects to be phased over a period of time

(c) **Spares Inventory.** There is urgent need to take a call and carve sound maintenance and sustenance philosophy by joining hands with Industries and academia to ***Develop, Design and Manufacture*** the necessary wherewithal, *Indigenously*, to reduce dependence on foreign vendors and maintain high level of serviceability of the state of the art equipment.

(d) **Policies & Procedures.** In the current perspective, decisions on policies and procedures, as under, need to be undertaken forthwith:-

(i) Protect the interests of the domestic industry first. And hence, no level playing field vis-a-vis foreign firms. Consequently, impetus to Indigenous Design & Development to be reinforced.

(ii) Within the domestic industry, private entrepreneurs, DPSUs and OFs to be pitched at Level Playing Field through competitive bidding.

(iii) Licensing system needs to be given a relook or done away with for manufacturing of defence equipment by private companies except for very critical products.

(iv) Insistence on joint development, joint trials & testing, Joint production, Joint marketing and joint product improvement in an institutionalized manner.

(v) DPP needs to be amended and the procurement norms changed, waivers from the CAG/ CVC guidelines. L1 concept to be replaced.

(e) **R&D.**

(i) Design Agency status to be conferred to DPSUs / OFBs.

(ii) Accountability of DRDO to be ensured through independent evaluation.

(iii) Induction of Private industry into R&D with incentives like tax rebates.

(iv) Policy of `No cost No Commitment` to be replaced by `Risk sharing, Gain sharing`.

8. **Areas of Future Research.** The more the research was dwelt into the instant topic, the more it was realized that this was going to be never ending. `Make in India` to each stake holder, holds a very different meaning. The trust deficit between the

stakeholders is such that none is prepared to have an open interaction with the other. While the shortcomings are known to each other but rather than convert the situation into a Win-Win, everyone is happy playing a Lose-Lose game so that the empathy is persistent for everyone unabated and accountability is amiss at all places and all levels. While it has been attempted to look at certain basic questions in the instant research, it would be more pertinent if concrete suggestions on the DAO and road map for '*Make in India*' for IA could be re-identified and spelt out. This would then enable to clearly demarcate between the procurements to be undertaken in the immediate future to attend the immediate requirements of IA, which is paramount for national security, concurrently identify the requirements to be put through intense R&D regime for futuristic needs towards self reliance through indigenization.

CHAPTER I- INTRODUCTION AND FLOW

*“Make in India, is not a slogan but a mission to be accomplished by a single minded
commitment about new processes”*

..... *Nirmala Sitharaman*



INTRODUCTION

Historical Perspective (from Swadeshi to 'Make in India')

1. **The Swadeshi Movement.** It was in the year 1905, with the announcement of division of Bengal by the then Viceroy Lord Curzon that the Swadeshi movement started in India and continued till 1911. The movement was aimed at promoting the domestic industry and domestic product while boycotting the British imported cloth (basically Manchester cotton). Though, the trigger was partition of Bengal but the outcome was providing boost to the domestic industry. This was apparently the first attempt at '*Make in India*'.
2. **Growth of Public Sector Enterprises.** At the time of independence, India was primarily an agrarian economy. The fathers of the nation realised that *Rapid Industrialisation* was the answer to economic independence. Prime Minister Jawaharlal Nehru promoted the concept of mixed economy, whereby the public and private sectors were to be given equal impetus for growth. His vision was translated into formulation of the Public Sector Enterprises (or Undertakings) (PSEs/ PSUs) for creation of heavy industries towards indigenisation.
3. **Make in India.** The '*Make in India*' initiative *per se* was launched on 25 Sep 2014, covering 25 sectors (including defence manufacturing) of the economy. This can be termed as the current form of Swadeshi movement. The initiative is built on four pillars, viz. *New Processes, New Infrastructure, New Sectors and New Mindset*. A major drawback of the Nehruvian economics, pointed out by a young economist Manmohan Singh (later on the Prime Minister of India from 2004-2014) in 1950s, was that it lacked export orientation. The current initiative of '*Make in India*' overcomes this drawback, as stated in the current Prime Minister, Shri Narendra

Modi's introduction of his vision to the public, "*Come make in India, Sell anywhere, (but) Make in India*".

4. **Defence (Army) Manufacturing.** It is a mandatory requirement of Indian Army (IA) to possess weapons and equipment which are military hardened with capability to operate along the length and breadth of the Indian subcontinent, from the plains of Punjab to the high altitudes of Ladakh and Arunachal Pradesh. A really tough call on defence equipment manufacturers. The Defence Research and Development Organization (DRDO) and the defence PSUs (DPSUs) have been providing reasonable solutions to the IA but lot more needs to be achieved to make the army self reliant through indigenization. Has '*Make in India*' achieved the desired results in this aspect? Will '*Make in India*' prove its relevance and effectiveness in Indian Army? The instant research has attempted to analyse these aspects.

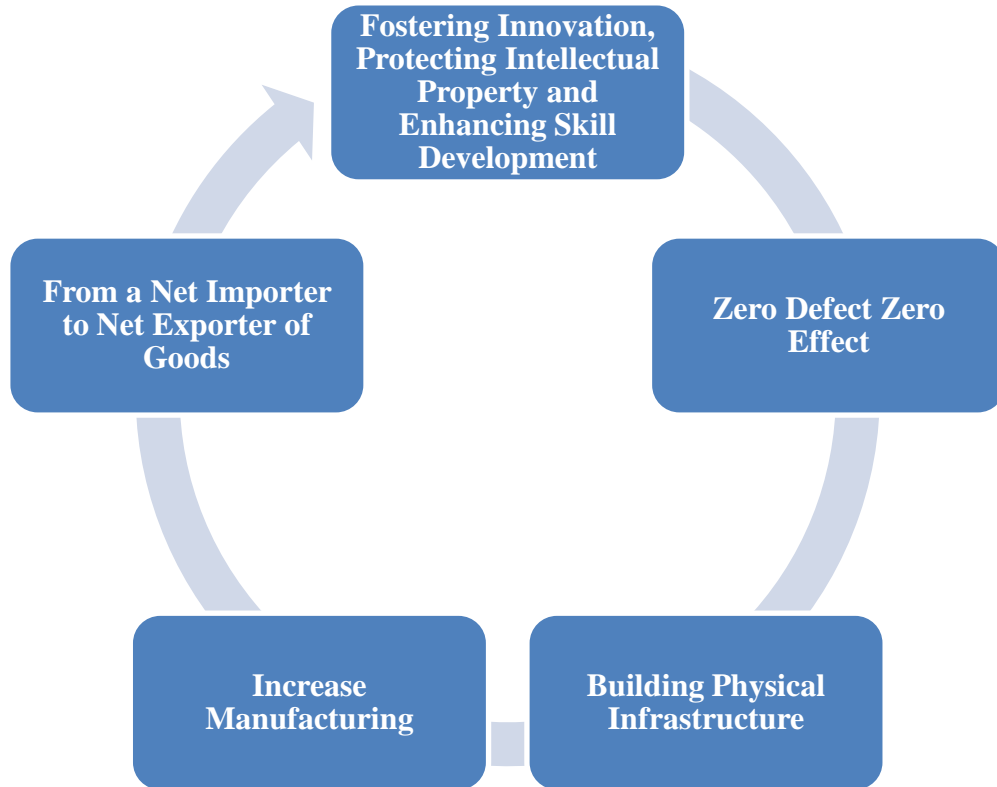
FLOW OF DISSERTATION REPORT

Statement of the Problem

5. It has been five years plus since Sep 2014, when '*Make in India*' initiative was launched. The country and the world went Gung-ho about the initiative and the perceived results. The first few years thereafter were encouraging; however, the follow up has left a lot to be desired. What to talk of exports in various sectors of manufacturing, India has not even been able to meet its internal demands in several areas. Towards its defence oriented needs, India has been amongst the top two importers in the world for almost a decade and a half now. At this juncture, it will be pertinent to highlight the vision of the '*Make in India*' initiative, as consolidated by

Dr. Praveen Kumar, as under. Incidentally, all of these need fresh interjections of the Government, for a boost:-

Figure: 1.1: Vision of the 'Make in India' Initiative



Source: Make in India: Promoting Indigenisation. The Monthly Journal Kurukshetra Ministry of Rural Development Vol. 64 No. 4 (Feb 2016), 27-28.

6. Among the 25 sectors identified, for 'Make in India', defence manufacturing was one. Manufacturing of products that are based on state of the art technology and competitive pricing can only happen when the Research and Development (R&D) behind the product is world class. IA is a major importer of its warlike equipment requirements. While DRDO, in existence since 1958, the DPSUs and Ordnance Factories (OFs) have been catering to the certain requirements of IA, however, the Hi-tech requirements, major weapon platforms and the life time support for them is still ex-import. Not only is this detrimental to the national security concerns, by making

India remain dependent on other countries but also is a huge drain on the exchequer and inhibits indigenous skill enhancement and job creation.

7. It is also a well understood fact that the requirements of Army are typical and unique and these cannot be subjected to free market enterprise. The manufacturing and quality assurance has to be of top class to be able to withstand the rigours of the usage of weapon and equipment in the IA. Thus, the necessity for world class R&D and world class product. Hithertofore, but for missile technology, neither the public nor the private sectors in India have been able to meet the desired ends. In this perspective, a positively driven, output oriented '*Make in India*' has immense relevance in IA and its effectiveness will be gauged only through the end product.

8. Hence, immediate necessity of planned and patient dedicated R&D for IA equipment manufacturing including adopting the hi-end technologies for major weapon platforms. It is understandable that R&D is a long drawn process *incurring sunk costs* as the results are generally, far and few. And unless the R&D dividends are monetized, there are not very many takers for the same. To bring private domestic players to undertake core R&D on niche technologies is thus a huge challenge.

9. Notwithstanding the constraints, R&D for futuristic projects towards indigenization for the purpose of self reliance for a country like India is certainly the need of the hour. While the immediate needs of IA for world class weapon platforms need to be met through products available the world over but in the long run the country needs to undertake reverse engineering, collaborative efforts, public-private partnerships, acceptance of the indigenous products with feedback and continuous improvements, incentives to the domestic private industry and start-ups towards R&D, indigenized weapon platforms and equipment for IA for self reliance.

Objectives

10. The following objectives were defined for the research:-
- (a) To identify the technologies that are required for modernization of the IA in the coming decades and whether these are being addressed by DRDO.
 - (b) To analyse the capabilities of the private sector to absorb the identified technologies.
 - (c) To explore bottlenecks causing delays in the indigenisation process.
 - (d) To explore the facets of current Government policies including defence procurement procedure (DPP) on promoting '*Make in India*'.
 - (e) To analyse the capability of defence PSUs to become equipment manufacturer.
 - (f) To gauge the relevance and effectiveness, '*Make in India*' has in IA.

Research Design

11. The research is a combination of quantitative/ descriptive and quantitative/ causal based on secondary data through open source and primary data in the form of interviews/ meetings and questionnaires to representatives from the following:-

- (a) MoD Elements to include the following:-
 - (i) Acquisition Wing (AM (LS), TM (LS)).
 - (ii) DRDO representatives.
 - (iii) DGQA representatives.
 - (iv) DPSUs/ OFB (OFs) representatives.
 - (v) **Army HQ.**
 - (aa) Directorate General of Weapons and Equipment (DG WE).
 - (ab) Army Design Bureau (ADB).

- (ac) Master General of Ordnance (MGO) Branch.
- (ad) Directorate General of Electronics and Mechanical Engineers (DG EME)/ Directorate of Indigenisation (DoI).
- (b) Major private players (both domestic and multinational) in weapons and equipment (defence) manufacturing.
- (c) Academicians and experts in the field.

Focus Area

12. The warlike weapon platforms and hi-tech technologies for IA are invariably ex import. For balance weapons and equipment, Indian army has been a near captive client of DPSUs and Ordnance factories. DRDO has been entrusted with the responsibilities of developing niche technologies but except for the missiles not much has been achieved through them. That too after a near unacceptable gestation period. It was only in late 1990s and thereafter that the realization towards self reliance in weapon technology started getting translated into private players being encouraged to participate. As on date most of the DPSUs and the private enterprises function as system integrators rather than original equipment manufacturer (OEM).

13. Self reliance for IA entails certain systemic changes, some of which have been undertaken and the others are under consideration. It is a work in progress. Some of the tenets are as under:-

- (a) Simplification of the defence procurement system.
- (b) Assurance to private sector.
- (c) Additional funds for R&D.
- (d) Revamping the culture in DPSUs from being an integrator to a manufacturer.

(e) Long term perspective planning for acquisition in conjunction with public-private partnership.

14. Being self-reliant towards defence needs is the hall mark of a developed nation, a global power. India certainly aims to be one in the future. However, to achieve this goal, all out impetus needs to be provided. As Raksha Mantri, Shri Rajnath Singh stated at the Seminar organised by the US India Business Council (USIBC), during the DEFEXPO 2020 at Lucknow on 06 Feb 2020, “*Reforms have been made and we will not stop here*”, there is definite requirement to garner all resources towards indigenization and self reliance in manufacturing to meet the Indian army requirements.

15. Budgetary constraints should not be used as impediment towards ‘*Make in India*’. Small steps lead to major gains. Procedures, policies and mindsets have to be attuned to accept the necessity and relevance of ‘*Make in India*’, more so towards the defence/ army requirements.

Research Questions

16. As has been brought out above, self reliance in defence (army weapons and equipment) requirements through indigenization is one of the important goals to be achieved through ‘*Make in India*’ initiative. Are we inching towards that goal or are there still miles to travel before self reliance in the right earnest is achieved? And if there are delays, why so? There is no straight and simple answer to these queries! Has the congenial environment been provided for competition to be generated for indigenous R&D in army requirements needs to be dwelled upon seriously? Suffice to say, that the predicament of how much has been achieved and how much will be achieved in IA through ‘*Make in India*’ persists. The following questions thus emerged for the purpose of this research:-

- (a) What all sectors of army requirements is the private industry working upon?
- (b) What are the army related technologies that the DRDO is working upon now?
- (c) What has been the improvement in indigenization through the amended DPP?
- (d) Will the Government give up the policy of NCNC and promote PPP towards R&D in weapons and equipment technology?
- (e) Will the defence PSUs shift towards equipment manufacturing from equipment integration?
- (f) Will 'Make for India' be more relevant vis a vis 'Make in India' as far as army weapons and equipment requirements are concerned?
- (g) Where, when and how will the indigenization in army help towards the GoI goal of becoming Net Exporter from Net Importer?

Scope

17. As has been categorically brought in the objectives, the scope of the research remained confined to discussing the technologies that are required towards army modernization and whether and when these can be made available in India, how good are the processes involved and what more needs to be done in this regard, as also what more needs to be done to ensure that the vision of defence manufacturing in India with the aim towards self reliance through indigenization can become a reality.

Limitations

18. While there is adequate literature on 'Make in India' *per se* but the literature on defence manufacturing, *specifically manufacturing in/ for IA* is limited. Also, during the course of the research it was realized that most of the data pertaining to

budgets, intricate technologies, partnerships is of sensitive nature and hence reasonable approximations have been resorted to for arriving at logical conclusions.

Typical limitations confronted, are as under:-

- (a) Data on Army weapons and equipment Nos and technologies and contractual details and supply orders was found to be classified/ sensitive, at places. Thus, references have been made through the secondary data available through open source. Certain approximations were necessary.
- (b) The instant research is possibly a maiden attempt at assessing the relevance and effectiveness of 'Make in India' in IA.
- (c) The researcher's experience in defence procurement has been optimally utilised to draw inferences.
- (d) Though 'Make in India', in IA pertains to both the Capital and Revenue budget heads. But within the available time duration, it has been feasible to look at certain aspects of capital budget related issues only with the exception of certain pertinent aspects in respect of DOI (Revenue Budgeting).

Literature Review

19. Very relevant literature in the form of books, magazines, briefs, websites, pamphlets and articles is available on the subject. All the literature read/ referred to has been listed in the References at the end of the dissertation report. Some salient aspects having direct bearing on the research are brought forth in the succeeding paras.

20. *The East Asian economies typically China, Indonesia, Thailand, Malaysia and South Korea rode on the back of boom in manufacturing industry. In India, communications, finance and computer related services yield five or more times the output per worker than most traditional services. The 'Make in India' goals of the*

manufacturing sector reaching 25% of GDP and creating 100 million new jobs by 2022, while worthwhile for inspirational purposes, do not appear realistic. The latter does not even appear realistic in a 20 year time frame. (Green, 2019).

21. *Akash: The first indigenously built supersonic surface to air missile capable of targeting Unmanned Aerial Reconnaissance Vehicles (UAVs), enemy helicopters and aircrafts from a range of 25 kilometers is one of the core missile systems of the integrated missile development programme. It is a great success story of the 'Make in India' initiative.. (Kumar, 2016).*

22. *The 1990s witnessed liberalization of the Indian market, ushering modern technology, best management practices in the corporate world and relatively easy access to high end Automated Industrial technology. Notwithstanding, this corporate success the defence R&D made little progress due to the lack of focus on part of DRDO and inadequate participation by the private players mainly due to unfriendly policies of the government. The policies appeared to provide more advantage to the foreign OEMs and hence the Indian industry could not participate wholesomely. In spite of the revision of DPP-2013 and formulation of supposedly more industry friendly DPP-2016, it is observed that the corporate sector has been maintaining a wait and watch policy or at times very cautiously indulging themselves in joint exercises of PPP and rarely in R&D. It is this indifference towards Defence R&D which must invite attention and a detailed study must be performed to obliterate the impediments. A developed R&D base would be mandatory to provide a strong foundation in direction of self – reliance and modernisation. (Kumar, 2019).*

23. *India is planning to push up domestic defence production by roping in the private sector, especially multinational corporations. Though this seems a laudable aim at first sight, the wisdom of letting in private players inspired by profits and a*

reluctance to be regulated into the strategically significant defence sector is suspect. The argument that the public sector has shown itself to be incapable of meeting the country's defence needs rests on flimsy ground. Above all, the government has so far shown that its dogmatism is its own worst enemy. On the face of it, manufacturing in India, which imports 60% of its military items, is a laudable notion. The annual output of India's domestic defence production is estimated to be Rs 4.4 lakh crore or USD 6 billion. Which is to say that Rs 7 lakh crore worth of equipment is imported. But why is there a hurry to invite the private sector and MNCs into the defence sector? May be one should switch from the rhetoric of "Make in India" to the more sober "Make for India" where the defence sector is concerned. (Navlakha, 2015).

24.*"Make in India" is seen as more openness and creating an environment that makes our firms able to compete with the rest of the world..... It is about creating the environment than picking specific set of terms... Second aspect is 'Make for India' because rest of the world is going to be less accepting of exports. If external demand growth is likely to be muted, there is need to produce for internal market. (Rajan, 2014).*

25. *'Make in India' can be seen as an opportunity to revive the crumbling manufacturing sector for manufacturing cannot survive in the absence of firm competitiveness. Innovation is required for the upgradation of capabilities in firms and industries for developing existing products or getting into new stream of activities. The countries such as China, South Korea and Taiwan have grown rapidly because of their manufacturing push and also by paying attention to developing domestic capabilities of their domestic firms along with providing a dynamic innovation ecosystem. (Sandhya, & Mrinalini, 2016).*

26. A study was undertaken to evaluate competitiveness of Indian industrial products in a global market using Revealed Comparative Advantage (CA) index and its modification- Revealed Symmetric Comparative Advantage (RSCA). Export data was empirically analysed for a period of 5 years (2010-2014) and performance of certain sectors was evaluated. The analysis reveals that India has comparative advantage in large number of product categories. However, these are broadly limited to traditional sectors of agriculture, textile and mineral resources. Also, certain sectors have reported a decline in comparative advantage. In the context of 'Make in India' the analysis reveals that the country lacks comparative advantage in major manufacturing sectors. There is dire need for creating an investor friendly atmosphere in India, so as to attract global players to the country. (Sapru, 2015).

27. Choosing or subsidising a particular sector (i.e. Manufacturing) may not work for India as it has worked for China, instead we have to figure out public goods each sector needs and strive to provide them. Focus should be on domestic investment i.e. FDI should be preferred over FII that will help in serving the purpose. Excessive dependency on foreign company can work against India by making it more reliable on foreign countries. (Sharma, 2016).

28. Lack of core R&D is reflected in poor industrial base even after 70 years of independence. Claims of DRDO towards technology development for Indian army have some degree of truth and relevance but a lot more needs to be done. Laxman Behera, in his book, 'Indian Defence Industry: An Agenda for Making In India', opines, "With little R&D carried out in the industry and other agencies, DRDO has been synonymous with India's defence R&D. The organisation despite its pockets of excellence (especially in the areas of nuclear and missiles) has not been very successful in providing a range of equipment to the armed forces. At present it faces a

number of challenges, including lack of policy direction, absence of an approved R&D plan, low investment, poor human resources management and a poor ecosystem not conducive to achievement. Addressing these challenges holistically would be a key to revitalise DRDO. The following specific suggestions are made in this regard:-

- (a) Increase DRDO's share in the defence budget to 10 per cent.*
- (b) Allocate at least 10 per cent of DRDO's budget (i.e. one per cent of overall defence budget) for promoting R&D on the lines of DARPA of the US or OCS of Israel.*
- (c) Set up a defence technology-specific university to cater for long-term specialised human resources requirements of DRDO.*
- (d) Set up a comprehensive review of human resources with reference to the multiplicity and increased complexity of DRDO projects. At the same time, ensure that DRDO brains are assigned to the work they are best at.*
- (e) Create a mechanism for increased number of higher appointment of senior armed forces officials in DRDO.*
- (f) Institute third-party review system for each of the major DRDO projects to ensure greater accountability". (Behera, 2016).*

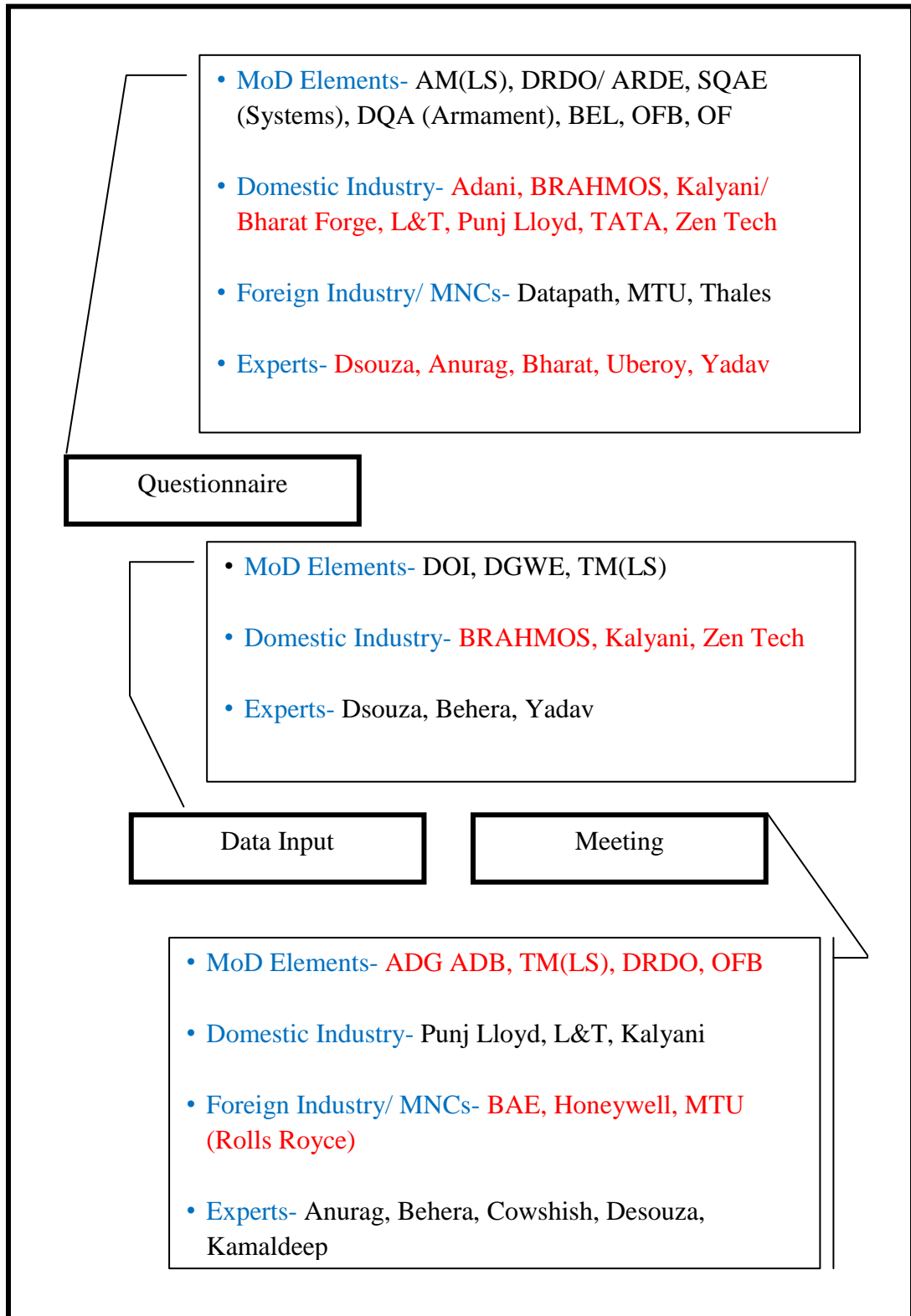
29. Behera's comment on capabilities of DRDO in respect of missiles technology, duly gets amplified by Sawhney in his description of the Indian Missiles developed by DRDO, when he says, '*Of the missiles being developed under IGMDP, the AGNI and PRITHVI are unique. Being ballistic missiles, these remain the prime focus of the United States' non – proliferation policy. Both missiles retain the element of surprise and uncertainty in employment because they do not replace an existing weapons system*'. (Sawhney, 2002).

30. The dilemma of creating niche technologies indigenously versus procuring the technologies from established developed countries has a lot to do with financial aspects as well as the industrial base / skill sets available in the country. India despite having been dependent on the west (primarily erstwhile USSR, UK, USA, Israel and France) for a majority of its hi-end army requirement and having established manufacturing hubs of these countries for the imported weapon platforms in its own territory has not been able to develop an indigenous technology edge. Why? Kevin Desouza while dwelling at length on this aspect in his book, *'Transfer of Defence Technology: Understanding the Nuances and Making it Work for India'*, states, "A close look at the restrictions against the opportunities that PToT may offer for improving capabilities in indigenous design and development reveals that the recipient's hands are well and truly tied. There is no freedom whatsoever for the recipient to channelise the know-how that has been obtained either for upgrading the product or for the development of other similar products. The best that can be expected are minor innovations through stretching the design deviation limits. This severe limitation in ToT contracts is possibly one of the major reasons for Indian agencies not being able to build up on foreign defence technology in the past many decades". (Desouza, 2019).

Methods Applied and Data Sources

31. A customized questionnaire (format of each questionnaire is enclosed at **Appendix 'A'**) was floated to the various agencies/ representatives as given out at Para 11 above. One to one / group interactions/ meetings were also undertaken. Consolidated details of responses received/ interactions made are pictorially described, as follows (Numbers, elaborations under each major stakeholder/ category are given at **Appendix 'A'**):-

Figure 1.2: Details of Questionnaires Floated/ Responses Received/ Interactions



Source: Researcher's Interactions Details

Chapterisation Scheme

32. The dissertation report is covered in the following chapters:-

- (a) **Chapter I** - Introduction and Flow
- (b) **Chapter II** - Research and Development and Technologies
- (c) **Chapter III** - Make in India and Indian Army
- (d) **Chapter IV** - Procedures and Bottlenecks
- (e) **Chapter V** - Recommendations and Areas of Future Research

CHAPTER II- RESEARCH, DEVELOPMENT AND TECHNOLOGIES

“DRDO has Given Definite Edge to the Country in Possessing Indigenous Capability in Defence Technologies”

-----Dr G Satheesh Reddy,

Secretary, Department of Defence R&D and Chairman, DRDO



TECHNOLOGY PERSPECTIVE

General

33. **Boots on Ground and Technology.** For the army, the boots on ground are always and definitely required because howsoever technical the machine or weapon system, it is the man behind it, who will ensure that the enemy is shot down. If the man is the doer, the technology itself, is a force multiplier. In modern warfare, the dividends from advanced and state of the art technology far out reach the stated goals. This was amply proven in the recent attack and killing of the Iranian General Qasem Soleimani, in a missile strike through a drone by the USA in Baghdad on 03 Jan 2020. If this was not enough proof of what technological superiority can achieve, the laying powerless of the retaliatory Iranian counter missile attack on USA bases in Iraq by USA anti missile defence system has proven that the world has moved ahead and much ahead from the days of hand to hand, small arm to small arm duels.

34. While USA is a forerunner in the technological advancements made in the field of defence and is very difficult to catch up with, India would do well to try and emulate the model of China, the immediate neighbour and adversary.

35. **2nd Largest Importer of Arms.** Three decades back apparently, India and China were nearly equals in the defence manufacturing. Both were languishing for want of technology and were solely dependent on supply of arms for respective needs from the advanced allies (nations). But in the past three decades China has grown leaps and bounds and is a major manufacturing cum export hub of arms whereas India has earned the sobriquet of becoming the largest/ second importers of arms in the world. As per Hindu, 12 Mar 2019, “India was the world’s second largest importer of major arms in 2014-18 and accounted for 9.5% of the global total,” according to the

latest report published by the Stockholm International Peace Research Institute (SIPRI). However, SIPRI has pointed out that the statistical data relates to actual deliveries of major conventional weapons. Several mega defence deals for which the deliveries are yet to begin have apparently not been considered. Nevertheless, no mean achievement by either of the adversaries, though not exactly, equally applaudable.

36. All this is despite the nine giant DPSUs and 41 OFs that are under the administrative control of the MoD's Department of Defence Production (DDP). There are also 50-odd research laboratories under the umbrella of the DRDO, the MoD's premier R&D agency. Together, these three (DPSUs, OFs and DRDO) have more than 190,000 direct employees on their payroll, including over 7,400 scientists. And to add to the MoD industrial might, as above, is the major impetus being given through the '*Make in India*' drive since 2014 to defence manufacturing as well, for which the domestic industry opened up to the domestic industry was pulled in the fray way back in 2001.

37. That is why, Times of India of 12 Mar 2019 states that India's continuance at the very top of the global arms import rankings, be it first or second, once again reinforces the continuing failures to build a strong indigenous defence industrial base (DIB), which can make the country strategically vulnerable, if supplies are choked, in times of conflict.

Technology Perspective and Capability Roadmap (TPCR)

38. **Emergence of TPCR.** During the interaction with representatives of the industry (domestic both public and private sector and multinationals), it became quite evident that unlike the past the industry today is well aware of the requirements of IA and the technologies that are embedded in these requirements. The major reason

for this awareness is the TPCR which has been originated by the Indian Army/ DGPP/ ADG ADB on the MoD website. Hence, all the required inputs are available in the public domain. The first TPCR came out in 2013 and the latest one is dated 2018. 67 out of the 221 items listed in the TPCR 2018 are meant for Army. A typical item listing from TPCR is as under, which categorically highlights all essential pre-requisites:-

Table 2.1: Typical Equipment Requirement Description in TPCR 2018

<u>Ser</u>	<u>Programme / Project</u>	<u>Expected Life Cycle of Equipment (Yrs)</u>	<u>Approx Quantity</u>	<u>Amplifying Remarks (If Any)</u>
221.	Next Gen Optical Fibre Cable	20	10,000 KM	Army
<u>Broad Parameters/ Preferred Technologies.</u> <i>It should be ruggedised OFC which would support DWDM based optical domain switching in a TBA with large No of fiber (12/24 Core) having universal ruggedized end connectors for quick layout. It should be easy to maintain in the field.</i>				

Source: TPCR 2018

39. **Preamble TPCR 2018.** All that is stated in the paras above, brings out a very positive and forthright perspective of the IA to a prospective manufacturer/ seller, it would be prudent to consider and evaluate the preamble of the TPCR 2018 as reproduced- “Technology Perspective and Capability Roadmap – 2018 (TPCR- 2018) provides to the industry an overview of equipment that is envisaged to be inducted into the ***Indian Armed Forces upto the late 2020s***. This document intends to drive the technology development process that the industry may like to pursue. This roadmap

may guide the industry in planning or initiating technology development, partnerships and production arrangements. Whilst pursuing any development or collaboration, the Indian industry should accord due importance to the Indian Government's thrust towards '*Make in India*'. The MoD is committed to the Government's drive towards development of indigenous production capability in the private and public sectors. Participation of the MSMEs is also being encouraged in the '*Make in India*' initiatives of our armed forces. The first edition of the TPCR was published in Apr 2013. Numerous inputs have since been received from the industry and business organisations for making the document more informative for potential manufacturers. Accordingly, the format and content of this edition of the TPCR have been revised and details of quantity, life cycle, broad parameters and preferred technologies have been included to the extent possible". (**TPCR, 2018**).

40. The most reflective statement given out in the preamble above is that "TPCR 2018 provides to the industry an overview of equipment that is envisaged to be inducted into the *Indian Armed Forces upto the late 2020s*". This statement is reasonably futuristic. Defence procurements take years to fructify. But what is dichotomous in the TPCR is that the TPCR tends to achieve procurement of lacs of crores in next decade or so when the past experience of last two decades suggests that barely Rs Two lac crore has been spent towards acquisition (capital procurement) since 2003. (Table at **Appendix 'C'** refers). In fact during the past six years since the launch of '*Make in India*', the expenditure through capital budget has been nothing to write home about. The charts below substantiate this aspect. The total capital expenditure amounts to Rs 90,000 crore (approximately), i.e. Rs 15,000 crore on an annualized basis.

Chart 2.1: Capital Budget Contracts of Indian Army since 2003-04

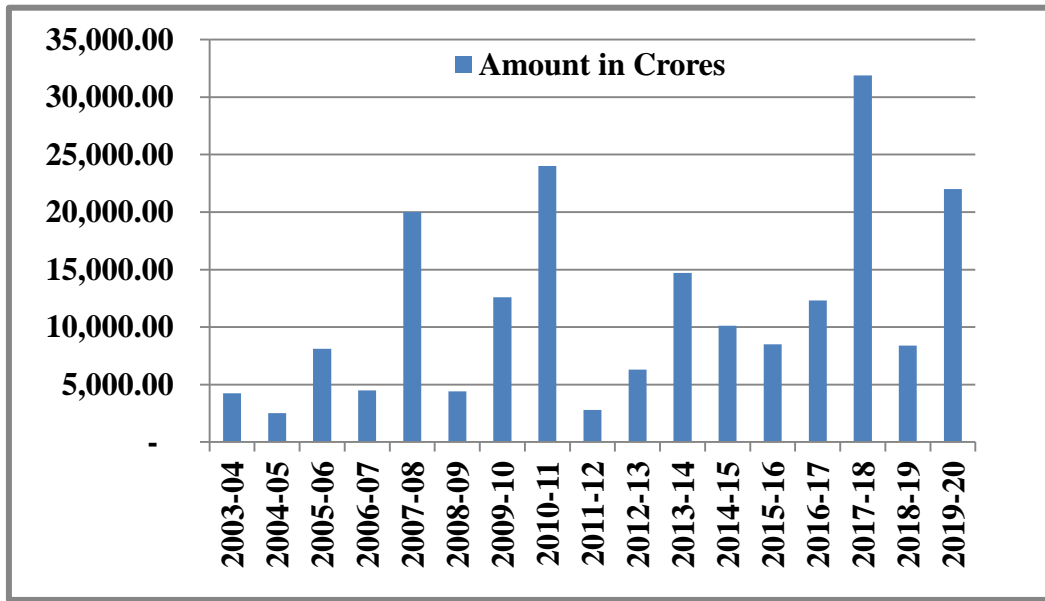
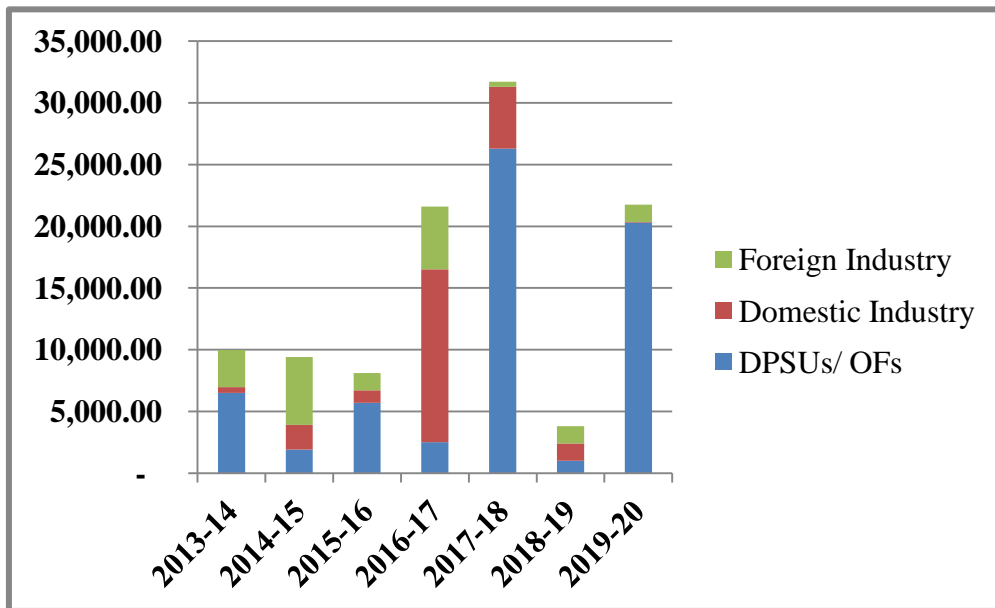


Chart 2.2: Capital Budget Share since 2013-14



Source: Data obtained from Army HQ, has been approximated

41. **Key Technologies Required for IA.** The TPCRs spell out not only the weapon platform/ equipment requirements but also the technologies that IA is looking at to meet its operational requirements. These are covered as under:-

- (a) **TPCR 2013.** Key technologies for army have been spelt out in TPCR 2013. As the concluding remarks in the document states, “Self-reliance in

meeting the requirement of defence equipment for the Armed Forces is a strategic necessity. Accelerating this pace of indigenisation is now a priority area for the MoD for which the active participation of industry, both the public and private sectors, is very important at every stage of the developmental process. Various mechanisms have been introduced to institutionalise this. Positive interaction between all concerned agencies is vital for progress to be tangible and viable. HQ IDS has initiated measures to develop this relationship through interaction at various levels which have been articulated through various fora, seminars etc. As a part of this initiative, the industry is being regularly invited to articulate its capacity and willingness to undertake projects on the anvil prior to in-house discussions during Services' Capital Acquisition Plan Coordination Committee (SCAPCC) meetings. The effort to give fillip to the process of indigenisation is being pursued in right earnest. This document has attempted to create awareness in industry of the capability and technology requirement of the Armed Forces. It will be regularly updated as and when plans are revised and would therefore attempt to provide the latest inputs on the Technology Perspective and Capability Requirement of the Armed Forces over a 15-year period. It is hoped that this would address the industry's concern about a level playing field. On the part of industry, it is expected that this document will encourage them to put forth firm proposals for participating in the self-reliance process in terms of R&D, production and product support commitments. It is also envisaged that the industry would be proactive and in future suggest options to the Armed Forces vis-à-vis their capabilities and available technologies. Taking a cue from the information disseminated

through this document, the industry may undertake capability and capacity building so as to cut down on time period for the acquisition cycle". (TPCR, 2013). But for FY 2016-17, the majority of contractual commitments during the period 2013-2019 have been made to DPSUs/ OFs. Whether, all the product of DPSUs/ OFs strictly falls under the purview of the definition of indigenized, will be discussed further in the instant report!

- (b) TPCR 2013 spelled out the following technologies for IA:-
- (i) Battlefield Transparency.
 - (ii) Command and Control Architecture.
 - (iii) Communication Systems.
 - (iv) Smart Radios.
 - (v) Information Dominance.
 - (vi) Electronic Warfare.
 - (vii) Nano Technology/ Micro Electro-Mechanical Systems (MEMS).
 - (viii) Artificial Intelligence and Robotics.
 - (ix) Chemical, Biological, Radiological and Nuclear (CBRN) Defence.
 - (x) **Advanced Weapon Systems.**
 - (aa) Surface to Air Weapons.
 - (ab) Hard kill Options.
 - (xi) Electromagnetic Pulse (EMP) Weapons.
 - (xii) Adaptive warheads.
 - (xiii) Weapon guidance.
 - (xiv) Future Combat Systems.

(xv) Bio-technology.

(xvi) **Non-Lethal Weapons**. Stun Grenades, Optical weapons, Acoustic weapons.

(c) Frankly, the technologies state above are so generic in nature that defence industry could not have focused and considered any major decisions based on these inputs. This aspect was also highlighted by industry representatives during the interactions.

42. **Weapon Platform/ Equipment Requirements**. While TPCR 2013 was elaborative on the technologies and the concepts, the TPCR 2018 is more precise and gives out the exact requirements alongwith approximate numbers. This is more in tune with what the industry requires. However, there still exist gaps between what is projected and what is perceived/ actual, which can be explained through the figure as under:-

Figure 2.1: The Basic Disconnect between Projections and Actuality

<u>TPCR Projections</u>		<u>In Actuality</u>
<ul style="list-style-type: none"> • Technologies spelt out • Weapon Platforms Nos Stated • Make in India emphasized • Requirements for 10-12 years • Most technologies are available ex import • Several lacs of crores 		<ul style="list-style-type: none"> • Indigenous technologies amiss • No commitments • Availability of CAPEX amiss • Contract fructifies in 5-7 years • Home grown technologies will take time to mature • Barely tens of thousands pa

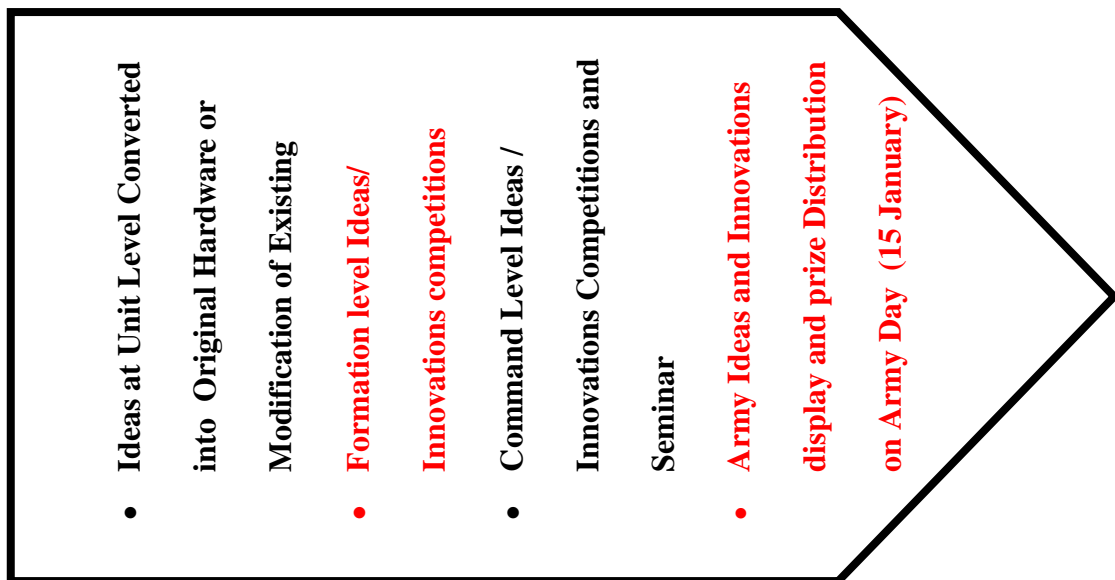
Source: Researcher's Knowledge/ Experience

IDEAS, INNOVATIONS AND TECHNOLOGY

Modes of Generating Ideas in IA

43. **Ideas and Innovations Approach.** IA follows a very basic methodology of identifying the futuristic requirements for itself. This thus forms the foundation for projections for modernization. This is the ideas and innovations approach through the grass root user. The following figure represents this approach:-

Figure 2.2: The Ideas and Innovations Approach in IA



Source: Researcher's Knowledge/ Experience

44. Over the years the approach has gained momentum and has yielded progressively better results. It is always endeavoured to present the selected ideas to the Raksha Mantri and if feasible to the Prime Minister. This approach has yielded the following benefits over the years:-

- (a) Has helped address the immediate necessity of improvements required in the existing systems.

- (b) As ADG ADB states, has helped create *statements of problems* for innovative requirements for modernization of the Indian Army.
- (c) Has helped the brains in the IA to vent their creativity.
- (d) Has showcased to the DRDO and industry, the requirements of Indian army which need attention.

Annual DEFEXPO

45. **The Genesis**. Among the various steps which have been undertaken to shape up the ecosystem for indigenisation and self reliance in the field of defence, DEFEXPO was a major step in the early 2000s. DEFEXPO 2020 at Lucknow from 06 Feb 2020 was the 11th edition of the biennial international level event. The most important aspect of this event was the tagline, '*India: The Emerging Defence Manufacturing Hub*'. If the theme and the euphoria around it is to be gauged, it can be stated with due candidness that India seems to have arrived on the Defence Manufacturing platform. But if the interaction with the defence industry representatives, as an ongoing process of the instant research is to be considered, as a benchmark, then things are very different on ground and there is a huge slip between the cup and the lip. All the facets in this regards will be brought forth in this dissertation report in due course.

46. **Highlights of DEF EXPO 2020.**

- (a) During the DEFEXPO, the highlight was the INDIAN PAVILION which exclusively showcased the joint ventures and cooperation between public and private sectors and highlighted the ecosystem that has been created through entrepreneurship in defence manufacturing towards '*Make in India*' and how it is helping the MSMEs and also the immense potential that lies ahead.

(b) Among the most important **indigenous** army weapon platforms on display during the event, were the following:-

- (i) Indigenous Quick Reaction Surface to Air Missile System (QRSAM) developed by DRDO.
- (ii) Upgraded PINIKA Rocket System developed by DRDO.
- (iii) Amogha III, 3rd Generation Anti-Tank Guided Missile (ATGM) from BDL.

Initiatives: DRDO, Others towards Indigenous Technology

47. **Domestic Capabilities.** The progress in R&D towards indigenous technology front is at best incremental and not very many experts are too optimistic about the technology capabilities of the domestic industry. As Col Kevin Desouza, an erstwhile research fellow at IDSA, states, *‘Defence private firms have very limited R&D capability and DRDO developed systems have weaknesses. Further, superior manufacturing capabilities are needed to ensure high performance and reliability. Hence it will take quite some time for these levels to build up’.*

48. **Predominance of DRDO in R&D for IA.** Talking about DRDO, Desouza states, *“DRDO has been able to provide strategic technologies such as the ballistic and cruise missiles (Agni, Prithvi, Brahmos etc). However, it has not been able to provide conventional systems such as battle tanks, ATGMs, infantry support weapons and small arms to competitive standards. DRDO designs are not proven and require prolonged exploitation before they can be fine-tuned to an acceptable level. The INSAS rifles is an example of a weapon which DRDO could not improve upon to reduce the weaknesses that were being experienced. The reasons could be the lack of finer expertise, R&D funds and quality manufacturing facilities”.*

49. For several decades DRDO has been the mainstay of R&D towards defence technology. All experts, including AM(LS), were unanimous in accepting the remarkable achievements of DRDO in missile technology. But elsewhere, a lot more is desired. Till very recently, DRDO developed technologies used to get productionised through the DPSUs and OFs. But during the past three years or so, the DRDO has increased its interaction with the private industries. It signed 114 ToTs with industries in 2019, establishing a record. Also, a new ToT policy and procedure with Nil ToT fee and Royalty has been rolled out for benefit of industries. During interaction with DRDO representatives, it was revealed that the following contributions have been made by DRDO to the Defence Industry Base (DIB) in India:-

- (a) DRDO-Industry Interactions are being undertaken periodically.
- (b) **Opening of Test Facilities.** Several world class facilities have now been opened for industries in DRDO laboratories
- (c) **New ToT Policy and Procedures.** The policy has been made compatible with DPP-2016. Only 5% ToT fee is to be charged from the Development cum Defence partners (DcPP)/ Development Partners (DP).
- (d) Compendium of “DRDO Products with Potential for Export”, has been released.
- (e) Compendium of “DRDO Industry Partnership Synergy and Growth”, has been released.
- (f) DRDO Industry Synergy Summit- 2019 was held at a mega scale.
- (g) Development of Tamil Nadu Defence Corridor has been planned and assisted.
- (h) Issue of NOC for Exports.

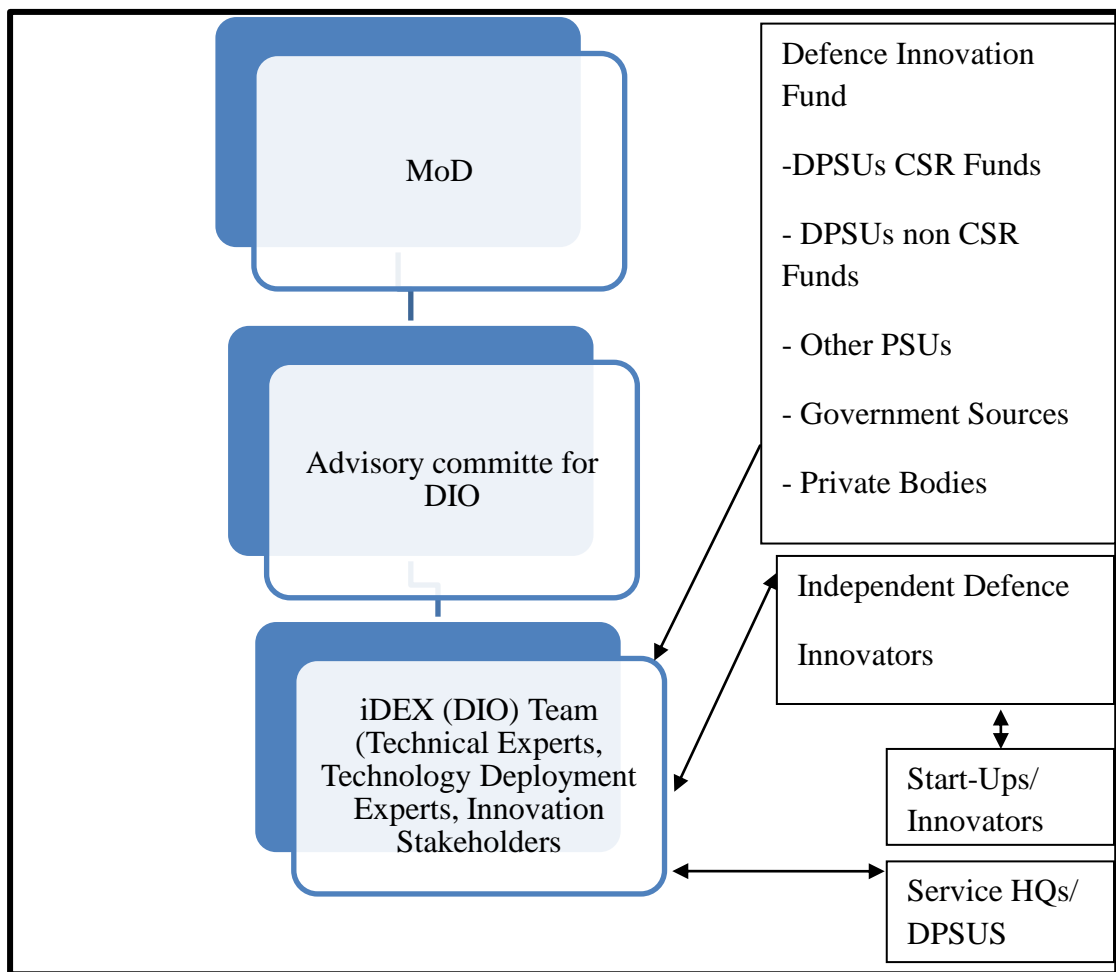
- (j) Issue of Industrial License.
- (k) Limited Series production (LSP) has been undertaken on case to case basis.
- (l) **Free Access to DRDO Patents.** DRDO has 450 patents for free access to industries. The details are available on drdo.gov.in.
- (m) **Technology Development Fund (TDF).** DRDO has launched a TDF which provides financial support to the Indian industries for the design development of innovative defence products. This encourages the R&D culture in industries and also leads to more self reliance in defence technologies.

50. From the aforesaid, it may be inferred that DRDO has instituted the process of change for betterment. It is becoming more diverse and open to assist in R&D for defence manufacturing in India towards indigenization and self reliance. However, during interaction with the industry representatives, it emerged that they were still skeptical about the recent initiatives of DRDO. Maybe things will improve in due course. On DRDO Laboratories, the representative of Datapath opined, *“Reduce size of DRDO and open the labs on 24 x 7 basis for young students/ entrepreneurs. Use the scientists available as faculties as well as mentors with various Class B city technical institutions”*.

51. While DRDO is attempting to reorganize the ways it used to function and interact with the industry, the domestic industry is wary and highly circumspect of investing huge CAPEX into R&D. This is notwithstanding the fact that the TPCRs are highly indicative of the forthcoming requirements of IA. The nagging doubts in all minds are the assurances required from MoD to cater to basic Return on Investment (ROI). This aspect will be addressed at length in this dissertation report.

52. **Innovations for Defence Excellence (iDEX)**. iDEX launched by the GoI in April 2018, primarily aims at creation of an ecosystem to foster innovation and technology in Defence and Aerospace by engaging industries including MSMEs, start-ups, individual innovators, R&D institutes and academia, and provide them grants/ funding and other support to carry out R&D which has good potential for future adoption for Indian defence and aerospace needs. iDEX is funded by a 'Defence Innovation Organisation (DIO)' which has been formed as a 'not for profit' company for this purpose by the two founders members i.e. DPSUs – HAL & BEL. iDEX functions as the executive arm of DIO, carrying out all the required activities while DIO provides high level policy guidelines to iDEX.

Figure 2.3: Structure of DIO (iDEX)



Source: DDP, Daily, DEFEXPO 2020, Day 3, February 7, 2020

53. It is thus seen that all stake holders in the system of defence manufacturing are putting in efforts, though seemingly incremental, led by the MoD. Vijay Mittal from OFB provides a plausible solution, *“There is a need to establish infrastructure with various organizations whether in public or private in a complimentary mode to each other rather than competitive mode. Since, duplicate infrastructure created with no assurance of continuous future loads of identified products for which the infrastructure has been created shall only result in national wastages which otherwise could be better utilized”*.

TRANSFER OF TECHNOLOGY (ToT)

Current Alternative

54. **The Conundrum.** Is ToT a just alternative to ‘*Make in India*’? During interaction, Bharat Singh (ex OFB) had very candid views on ToT. He opined that ToT can never be complete and certainly not be current. He opined that the next generation equipment in all ToT cases will have to be bought afresh. And India needs to take care of this aspect.

55. Col Kevin Desouza states, *“As an Army officer, I would prefer tried and tested systems being manufactured to high standards of quality and reliability by trusted firms. If indigenous R&D systems cannot meet these standards despite prolonged periods of use, I would prefer ToT (ex-foreign) ones, provided that they can be modified to suit Indian conditions. For strategic systems, I would prefer indigenous systems since use of foreign ones may not be supported by the OEM firm always”*.

56. The relevance of ‘*Make in India*’ to the IA should start with the question of whether the IA can perform its role better with purchased foreign systems or foreign

ToT-manufactured systems or indigenous designed and manufactured systems. As Desouza states that here, the quality and prices of similar products through these three different approaches need to be compared. This also needs to be seen in the light that several in the decision making cycle at the apex, in Indian governance, opine that India cannot continue to fight future wars with imported systems.

57. The Kalyani (Bharat Forge) group representative echoes this view when he states that let ToT happen from anywhere, in India (DRDO) or abroad, the IPR will remain an issue. Thus, is IPR in case of complete ToT also is not assured, the need for indigenization is all the more reinstated.

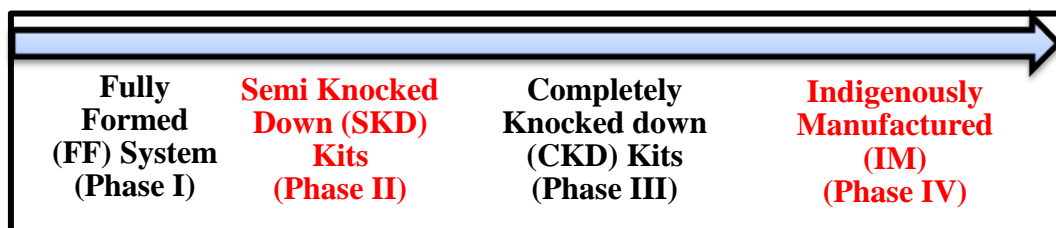
58. **Levels of ToT as per DPP.** In 2001, when the Tank T-90 were contracted from Russia, it was considered to be a complete ToT. Few years down the line it was realized that the component level repairs was amiss in the ToT and hence, India had to under a separate contract for that to the anguish and surprise of many. Did this happen because of lack of knowledge, ignorance, oversight or a standard practice the world over? This needs to be considered through an overall perspective of how ToTs, specially in the field of sophisticated, niche defence technologies happen in the world.

59. Desouza who has written extensively on ToT says, *“These facts raise several questions. What exactly is full ToT and why is it that it cannot be ensured, even from friendly nations? Is it correct that foreign Original Equipment Manufacturers (OEMs) intentionally and maliciously deny the technology of the most critical parts of their equipment to Indian recipient agencies? Why is it that these requirements cannot be brought under contractual obligations enforceable by law?”*. (Desouza, 2017).

60. What needs to be understood is that *Design, Development and Manufacture* are three distinct functions in the production cycle. While capability to manufacture does form part of the ToT contracts, design and development aspects are prohibitively expensive and in most cases the OEM will refuse to part with them at any cost. This results into fresh contracts when a newer version of the equipment is to be procured/ manufactured. Another angle to this aspect is the fact that no OEM the world over manufactures every component of a military hardware. Typical components are manufactured, balance are outsourced. Hence, a complete ToT from an OEM for a military equipment is a misnomer to start with. Commenting on the aspect of ToT to OFB, DQA (Armament) has opined that ToT from foreign manufacturer is between the foreign OEM and Indian Manufacturing agency. For armament, it was always with the OFB. However, OFB has not been able to absorb 100% of the ToT offered. While the ToT contracts incorporate all aspects, viz. training of various levels of employees, support for indigenous manufacturing etc, but the whole hearted support of the OEM is found wanting in several cases. One very important aspect that OEM's are required to cater to is the identification of alternatives and technologies available in India which can then be used towards indigenization of the product for which ToT has been bought.

61. **Stages of ToT Absorption.** Typical ToT absorption cycle, as under:-

Figure 2.4: Typical Gradual ToT Absorption Process



Source: Researcher's Knowledge/ Experience

62. The end goal is always the IM stage.

63. Desouza explains the description of various categories of items as per DPP 2016, *“Paradoxically, the lack of OEM deliverables of the manufacture process in category 2 items and the design in category 3 and 4 items actually has a positive side. It provides Indian firms The DPP describes category 1 as those items for which complete ToT is provided and mentions that it can be considered as Complete Transfer of Technology (CToT). Further ahead, it mentions that category 2 can also be considered “CToT”, though why this concession has been provided is not clear. For category 3 items, the DPP mentions that for the purpose of evaluating the depth of ToT, it will be presumed that ToT for indigenous manufacture is not provided. An extension of this logic would classify category 4 and 5 items also as those where ToT is not provided. The DPP also specifies the minimum accepted proportion on a cost basis. Categories 1 and 2 should comprise of a minimum of 60 per cent of the total cost of the system, categories 3 and 4 not more than 25 per cent and category 5 not more than 15 per cent. This aspect is re-emphasised stating that in the IM stage, there should be an (indigenous) value addition of at least 60 per cent. We now come to the key question. What constitutes a full ToT? Clearly, it would be an arrangement where all parts of the system fall in category 1, or, giving the concession that the DPP has, category 2 as well. So isn’t the DPP 2016 contradicting itself when it says at page 128, paragraph 1(c) that “The ToT shall be comprehensive, covering all aspects of design, manufacturing know-howwhich will enable the Production Agency to manufacture,.....from the SKD/CKD/IM Kit.”, or at 1(e) that “Vendor would submit an undertaking that he would provide and support complete ToT for phased manufacture,” when at paragraphs 1(h), (j)*

and (k) it has accepted that outsourced and proprietary items may exist for which ToT may not be possible”.

64. **Technology of Proprietary Parts**. Can the trade secret be parted with, at any cost? Every OEM of military hardware understands that he is amongst the very few in the world who owns the technology. It takes years and several iterations for such military technology to mature for commercial usage. Sellers are in single digit, buyers are aplenty (several nations and even state and non state actors). Once a buyer has gone into a contract he is bound to return to the seller (the OEM) for product support/ upgrade, time and again. These are sufficient reasons for the proprietary item not to be sold. Then there are fears of the technology getting compromised and leaked to competitors. In the world of military hardware, niche technologies are rare and hence held close to the heart. This thus brings us back to the requirement of becoming self reliant through indigenous technologies for IA. And again the answer in ‘*Make in India*’.

65. As Mittal from OFB says, ‘*Organizations with profit motive look for importing sub-systems through various means and act as prime vendor and aggregator by finding flaws in the procurement procedures and project their product as indigenous product with required percentage of indigenous contents. This also actually does not help in reducing imports or the real spirit of ‘Make in India’*’. There is also a need for a policy to identify products to be indigenized. As of now, due to lack of the policy directive, each of the manufacturing organizations tend to encash the products already being manufactured in India in DPSUs. The basic aim of the whole exercise is to identify new products to be made in India and not conform to the products already being manufactured in India for diversion to private industry.

66. To this extent the DPP categorically defines the deliverables for each category of the ToT. All items to be delivered through ToT, in the system have been divided into five categories as given at Table 2.2.

Table 2.2: Deliverables for each Category of ToT as per DPP 2016

<u>Cate- gory</u>	<u>OEM's Source</u>	<u>Foreign OEM's Deliverables for ToT</u>				
		<u>Manufacture Process Documents, Training</u>	<u>Engineering Drawings / Design</u>	<u>Performance/ Procurement Specifications</u>	<u>Details of OEM's Single Subcontractor</u>	<u>Details of Source of Supply</u>
(i)	Designed and manufactured in-house	Yes	Yes	Yes	Not required	Not required
(ii)	Designed in- house but manufacture out sourced	No	Yes	Yes	Not required	Not required

<u>Cate- gory</u>	<u>OEM's Source</u>	<u>Foreign OEM's Deliverables for ToT</u>				
		<u>Manufacture Process Documents, Training</u>	<u>Engineering Drawings / Design</u>	<u>Performance/ Procurement Specifications</u>	<u>Details of OEM's Single Subcontractor</u>	<u>Details of Source of Supply</u>
(iv)	Purchased as per specifications	No	No	Yes	No	Yes
(v)	Proprietary, designed and manufactured in-house	No	No	No	No	No (OEM will provide)

Source: IDSA article on 'Examining the Case for Complete Transfer of Technology' by Kevin A. Desouza, March 21, 2017.

67. **DGQA Opinion on ToT.** Being the quality assurance people, the DGQA is one agency which interacts and evaluates all technologies on the offering whether through DRDO, private industry or foreign firms. When asked whether the foreign manufacturers provide TOT, as per the contract, for enabling manufacturing in India, the response of Col Sunil Zachariah was highly revealing, *“Equipment/ Weapons of modern technologies have been procured by IA but there has been no TOT, sharing of critical documents related to specifications, drawing etc. If 5th Generation Equipment/ Weapons are used by Developed Nations, TOT for 3rd Generation only takes place. Even if TOT takes place, it is only partial as critical portions of TOT are not transferred. Currently, DGQA is associated with MAKE-II projects undertaken by IA. DGQA does have the experience and knowledge of contemporary technologies in addition the legacy technology and knowhow. IA is still relying on old age Equipment/ Weapons which are still not been made obsolete. The technology associated with the manufacturing of spares and assemblies of these Equipment/ Weapons are old, even though CNC/ high-tech machineries have replaced old machineries. Even the materials specified in the specifications are not being changed even though better alternative materials are available”*. TOT is not provided in totality. Critical and high value technology is not transferred. Some instances are as follows:-

- (a) **‘ECIL – Fuzes.** In manufacturing of Fuzes for Arty ammunition 155mm, 130mm, 105mm Guns, critical components like CKD (electronic, electric detonators) relay, booster pellets, reserve battery are still being imported.
- (b) In case of II tubes manufactured by BELOP, the Micro Channel Plate (MCP), Fibre Optic Place (FOP) is still being imported.

(c) The terminology used in Russian TOT like 'Field repairs' are termed as 'Base repairs', 'Components' are termed 'Sub Assemblies'. Hence, the TOT documents need to be checked thoroughly before signing, keeping the terminology being used by the concerned countries.

(d) Procurement of Small Arms like NEGAV, TAVOR, etc have been done directly from ISRAEL for modernizing the IA and no manufacturing is undertaken in India. Its procurement process did include evaluation of weapon during PDI during which lot were rejected for not meeting the Indian Standard and requirements and hence necessary aspects related to the quality were incorporated in their production (despite the fact that the company is renowned worldwide)'.

68. **Concept of Self Reliance Index (SRI) and Comprehensive R&D Policy.**

Dr A.P.J. Kalam committee in 1992 introduced the Self Reliance Index (SRI), which indicated the proportion of indigenously procured content against the total. As on date the goal is to achieve 70% indigenization by 2027 which is the culminating year for the current LTIPP (2012-2017). Can this be realistically achieved? 7-8% of the defence budget allocations notwithstanding, DRDO still feels it is less. Both DPSUs and OFB now claim to be diverting 6-10% approximately towards R&D. So collectively the three MoD elements, i.e. DRDO, DPSUs and OFB are putting in substantial amount towards R&D. It certainly is much more than what the domestic industry collectively or individually is willing to contribute owing to various issues which will be dwelt later. In such a scenario, is the goal of 70% indigenization without a comprehensive R&D policy feasible?

69. *Thus, the requirement of inclusive, comprehensive and collaborative effort towards the stated goal of self reliance through 'Make in India'.*

INFERENCES

70. **Inputs on Technology and Weapons/ Equipment Requirements for IA.** All stakeholders in Make in India, be it DRDO/ DPSUs/ OFs or domestic defence manufacturers or MNCs, are well aware of the requirements of IA for the next 10-12 years including individual items and the embedded technologies required therein. TPCRs (2013 and 2018) having got promulgated on the website (public domain) have ensured the desired level of transparency and level playing field for the entire industry.

71. **Proactive DRDO.** DRDO has realised that it is now more accountable for its output and that the R&D budget has to justifiably utilised as it is now subject to public scrutiny, as well. Also, with the ToT conditions becoming lucrative and the big domestic private players looking at investing in core R&D with due incentives from the GoI/ MoD, the DRDO hegemony in defence R&D stands challenged. Hence, the mantra, 'perform or perish'. While the policies have been amended but the implementation on ground should also follow suit for all concerned to witness and acknowledge.

72. **R&D Budgets.** While OFB and DPSUs have confirmed that the allocation towards R&D has been greatly enhanced, the domestic industry is not forthcoming to make any commitment on the R&D budgets. Various aspects including lack of GoI/ MoD assurances towards helping monetize the expenditure on R&D, non-sharing of expenditure on R&D by GoI/ MoD, failure of MAKE 1 projects

during the past decade plus, sheer lack of CAPEX capability, inability to compete with MNCs on level playing field have emerged as reasons for the domestic defence manufacturers not going all out towards indigenization through home grown R&D.

73. **Capital Expenditure in IA.** Despite huge impetus to '*Make in India*' in defence/ IA, by GoI/ MoD, the expenditure pattern over the past six FY, is not indicative of a change in trend or a major thrust towards the stated goals. Is this due to lack of funds, or procedural delays or incapability to incur expenditure? These aspects will be deliberated in the chapters to follow.

74. **Collaborative Effort.** It is realised that owing to the nature of business involved in '*Make in India*', for IA, a complimentary and collaborative approach has to be arrived at with the participation of all stake holders. So that the entire process becomes a Win-Win for all. Internal bickering and scuttling the entire project for individual stakes has to be thus avoided through conscious efforts and due strictures. The dictat in this aspect has to be institutionalised and made mandatory for all concerned to adhere to.

CHAPTER III- MAKE IN INDIA AND INDIAN ARMY

“Let’s think about making our product which has ‘zero defect’ ... and ‘zero effect’ so that the manufacturing does not have an adverse effect on our environment”. Come make in India. Sell anywhere, (but) make in India”.

..... Narendra Modi

Prime Minister of India



NATURE OF THE PROBLEM

Historical Perspective

75. At Independence, India inherited armed forces that were battle hardened, had sufficient backing of military cantonments and infrastructure but lacked facilities for creating the basic hardware, i.e. *WEAPONRY*. For the most rudimentary personal weapon and basic vehicle for movement, India was dependent on what was left behind from the British era and if there was requirement of spares, the country had to look westwards. The Ordnance factories created by the British and inherited by independent India were primarily provisioning for ammunition and general stores and clothing requirements.

76. Amidst such constraints there was a requirement to initiate industrialization as a priority. The Public Sector Undertakings (PSUs) were thus born. Some of these were dedicated for defence needs and hence were termed as defence PSUs (DPSUs).

77. Over the years the DPSUs have rendered a yeomen service to the defence forces. For a major portion of the post independence era, the DPSUs have been the only defence weaponry hardware oriented industry in the country.

Defence Needs Post Independence

78. Times have changed and so have the needs. The developed and western worlds (considering that they are no more congruous), have gone ahead leaps and bounds.

79. Since time immemorial, in warfare, the weapon used to last centuries before a revolution could alter the pattern and potency and a new form of weapon would emerge to continue to serve the mankind another few centuries. However, the 20th

century and now the 21st century have seen rapid changes in weapon concepts and delivery systems.

80. In such a scenario, India's DPSUs and Ordnance factories have been left with a lot to be achieved. Owing to policy constraints, the Indian governments for nearly six decades post independence were averse to letting the private entrepreneurship take plunge into the defence industry. India did not believe in export of weapons. Consequently, India remained dependent on the imports for its major weapon system needs and kept harbouring the DPSUs for taking over transfer of technology and produce "copy-paste".

81. Alas, these policies ensured that not only the DPSUs did not advance in terms of indigenous technology but also the private industry, for want of the desired impetus and government support and assurance, did not progress much towards self reliance.

82. Are we not delayed in our quest to be self reliant in defence industrialization? This is vouched from various statements of top military leaders and analysts which keep getting voiced in the form of grave concerns, sometimes referring to lack of sufficient ammunition, at other times lack of indigenized technology, and most often lack of superior and sufficient military hardware with state of the art technology to counter the threats on our long borders with two major adversaries. And hence, a great deal of additional effort has to be put in by all stake holders to realize the dream of defence industrialization towards self-reliance. The current AM(LS) in acquisition wing of the MoD ratifies the concerns while commenting on the requirement of niche technologies for IA, *'Yes, there is seriousness, however, there is also a concern for procurement orders not being assured'*. She adds, *'Quality and output of design and development within our country needs to improve further'*.

THE STAKEHOLDERS IN INDIAN DEFENCE AND THEIR INTERESTS

Defence Needs and Self Reliance

83. On studying the most militarily developed nations in the world, it is realized that despite absolute modernization and state of the art weaponry, barely a couple of nations in the world can boast of being completely self reliant for their defence needs. Invariably every nation has to depend on some portion of the weapon system through import. Also, those nations who claim to be almost self reliant are the ones who have benefitted from the technologies of allies, e.g. Russia getting benefitted from German technology post WWII, similarly China drawing its benefits from Russia, Israel picking up threads from France and USA and UK collaborating for great deal of advancement in post WWII era. The defence industrialization in all these countries has the blessings of the respective governments. All of these nations are major exporters of arms and meet respective defence needs including R&D towards defence through exports of defence oriented weapons and equipment. AM(LS) opinion in this regards stands to logic, when she says, '*Incremental approach, rather than quick change/ result expectation*'.

84. For a major part, post Independence, India was dependent on Russia for its military needs in all three armed services, subsequently on USA, UK, Canada, Israel, France and South Korea, more recently. The import bill towards military hardware has consequently been on an increase. Concurrently, the realization that a developing power like India should have its defence needs fulfilled from within is also becoming bolder.

85. Post 2001, when the defence manufacturing was liberalized, 200 odd private sector companies have obtained nearly 340-odd industrial licenses. It is learnt that 50-

odd companies have commenced production. During the period 2006-07 to 2010-11, a study conducted under the aegis of IDSA estimated self-reliance at around 40%. In the ensuing three years, the MoD spent a whopping Rs 82,496 crore on capital procurement from foreign sources. Additionally, there was an equally significant amount of outflow of foreign exchange (FE) in the form of India's indirect arms imports. These indirect imports are undertaken by the DPSUs and OFs in the form of parts, components and raw materials for the purpose of their production. In four years, from 2011- 15, the utilisation of FE by the nine DPSUs alone amounted to a staggering Rs 60,238 crore, indicating the huge import dependency implicit in whatever little is being made in India. (Behera, 2018).

86. This realization has resulted in attempts to revise policies, give impetus to the indigenous industry to indulge in R&D, make DPSUs more competitive, make defence R&D organization (DRDO) more accountable and lay down procedures towards overall enhanced defence industrialisation. However, even if the go ahead happens tomorrow and all the stake holders bend their back towards the envisaged needs it may take decades before the Indian industry will be able to reach at par with the technologies available with the major developed military powers. *Thus, the need to continue with foreign participation, at present, while boosting own efforts.*

87. At this stage, it is pertinent in the overall context of the topic to analyse the role and outcome of the stakeholders in the process. These can be enlisted as under:-

- (a) Government of India (GoI)/ Ministry of Defence MoD).
- (b) DRDO.
- (c) DPSUs.
- (d) OFB/ OFs.
- (e) Private Industry.

(f) Foreign defence industry.

(g) The Indian Army.

88. **During the course of the instant research, representatives of the all the aforesaid stake holders were interacted with. Consequently, primary inputs obtained from them through questionnaire, one to one interaction and interviews have been immensely useful in corroborating facts and drawing out useful inferences.**

The Stakes

89. **GoI/ MoD.** The MoD as GoI, sets the tone to cater for the defence needs. The policies and procedures to enable all the stake holders to pitch in and enable the nation towards self reliance in defence industry is to be set up by MoD, while bringing all other ministries on board, specially the ministry of finance.

90. **DRDO.** For decades, DRDO has been the research arm of the MoD. In the recent past the accountability has been enhanced, the role and output is being put to test. Only if the DRDO were to say NO, process for seeking the weapon system through other sources could commence. This dictum is now changing.

91. **DPSUs.** If DRDO is the research arm, the DPSUs were/ are the production agencies. The monopoly that DSPUs have enjoyed towards defence manufacturing is now being put to test through competition being brought in and DPSUs being made as another vendor.

92. **OFB and OFs.** The OFB alongwith the OFs has been content with producing low technology output for the defence services at a bloated cost through a relatively inefficient system. This is being questioned now. The very existence of OFB in the current scenario has been put to test. Vijay Mittal from OFB counters this by stating, '*OFB till the year 2006 was recipient of all technologies required for*

modernization of IA as nominated Production Agency (PA). In the year 2006, OFB also got mandate to carry out its own R&D by way of reverse engineering product and process upgradation and development of new product as per projected requirements by IA for its modernization. Today, OFB has 42 co-located development centers with its production units. More than 100 officers have been trained in various defence technologies through Cranfield University, UK. Almost 25% of the annual value of issue of OFB products issued to various Armed Forces is due to the in-house developed products of OFB’.

93. **Private Industry.** If there is one sector which is going to be benefitted the most and which can actually bring in the defence industrialization in the right earnest in the country, *is the Private Industry, the entrepreneurs.* Not only the big players but also the MSMEs. It is their zeal to test the untested, venture into the new that will come to the fore if the right conditions and environment is provided to them.

94. **Foreign Defence Industry.** At the current stage it is not feasible for the Indian industry to go ahead on its own for all its defence oriented needs, for then the things will be delayed beyond the acceptable. The Indian nation needs the foreign partners for technology transfer and establishment of the infrastructure to provide the initial impetus, as also to assist in R&D.

95. **IA.** Last but not the least, the army is the immediate and the largest beneficiary of defence industrialization. As of now, non availability of the right type of weapon system forces the army to look elsewhere for its requirements to meet the operational needs.

Points of Conflict

96. **Political Dispensation.** It was in 1991 that the GoI for the first time since independence, decided to open the economy and overcome the draconian

License Raj. The defence requirements were also concurrently opened to foreign direct investment, in due course. However, it was post Kargil (1999) and during OP PARAKRAM (2001-2003) that the requirement of modernization of the defence forces was felt and pushed ahead in the right earnest. The Defence Procurement Procedure (DPP) was brought in.

97. While, the political leadership, immediately on independence had different notions about the defence needs, four wars and 70 years down the line and with India becoming the fifth largest economy in the world, the political dispensation towards defence needs has also undergone a major morphosis. *However, the going is slow*. Defence industrialization at par with contemporary military powers is still a far cry. And so is the self reliance. Even ‘*Make in India*’ initiative launched amidst great fanfare in Sep 2014 has left much to be desired at least on the defence front.

98. **Indian Private Sector**. The private sector has money, it has the skill set and the talent but what it lacks is the assurance and returns. The most prominent business houses in the country claim to have put in reasonable amounts of capital in the R&D towards defence but except for the Navy not much has come their way. Consequently, time and again the industry has expressed its resentment over the slow pace at which the seeming reforms are taking place.

99. The GoI insists on a model of “No Cost No Commitment (NCNC)”, towards procurement which prohibits the GoI to give any assurance of procurement to the private developer. Hence, the industry is always on tenter hooks and the effort is half hearted. Resultant gain is to the DPSUs. Private partner gets disillusioned and his product does not find acceptance. The DPSU with a slightly better output owing to various reasons, fetches the procurement order. And the monopoly continues. This is

duly substantiated if one were to examine the contracts established under capital head from FY 2013-14 till date. This aspect is categorically highlighted in **Chart 2.2**.

100. **Strategic Partnerships (SP)**. Taking stock of the above, the GoI has now accepted SP model to extend assurance to the industry and boost indigenous defence industry. This model will also take some time to flourish because the technology takes time to mature. In the meanwhile, the armed forces will have to go the import way. As given out in the DPP, *“The Strategic Partnership model is being implemented to enable participation of private Indian firms in Make in India in defence. The SP is expected to play the role of a System Integrator by building an extensive eco-system comprising development partners, specialised vendors and suppliers, in particular, those from the MSME sector”*. (DPP, 2019).

101. **Role of Army**. Army needs to approach the procurement of military hardware as a specialist cadre. Accordingly, the qualitative requirements have to be finalized in a realistic manner and thereafter not tinkered with. This will give the industry the desired platform to develop. Also, with the future requirements of a decade plus ahead in mind, the armed forces need to be patient and accept indigenous product alongside the state of the art imported product to meet their operational needs. The indigenous product with due collaboration of the user, the developer and the producer can continuously improve.

102. While immediate defence needs may not be fulfilled by the indigenous defence industry as on date but given the assurance of procurement in future and backing of the armed forces and GoI, the defence industrialization may achieve the desired goals. There is a need for IA to apply the stated goal of ‘*Make in India*’, towards own weapons and equipment requirements and enunciate in house policies with a roadmap for incremental increase in the indigenous content.

GOI INITIATIVES TOWARDS POLICY CONSOLIDATION

National Level Committees

103. **Security/ Self Reliance.** Post the Kargil conflict, No of committees/ task forces at the national level have been set up since, as under:-

Table 3.1: Committees/ Task Forces on Defence, Post Kargil- 1999

Committee Nomenclature	Chairman	Year
(a) Reforming the National Security System, Group of Ministers (GoM)	Arun Singh	2001
(b) Towards Strengthening Self Reliance in Defence Preparedness; Revitalising DPSUs and OFs	Vijay.L. Kelkar	2005
(c) Improving Defence Acquisition Structures in MoD	N.S. Sisodia	2007
(d) Redefining DRDO	P. Rama Rao	2008
(e) Defence Expenditure Review	V.K.Misra	2009
(f) National Security	Naresh Chandra	2012
(g) Defence Modernisation and Self Reliance	Ravindra Gupta	2012
(g) Restructuring of HAL	B.K. Chaturvedi	2012
(h) Committee of Experts for Amendments to DPP 2013 including Formulation of Policy Framework	Dhirendra Singh	2015
(j) Selection of Strategic Partners	V.K. Aatre	2015

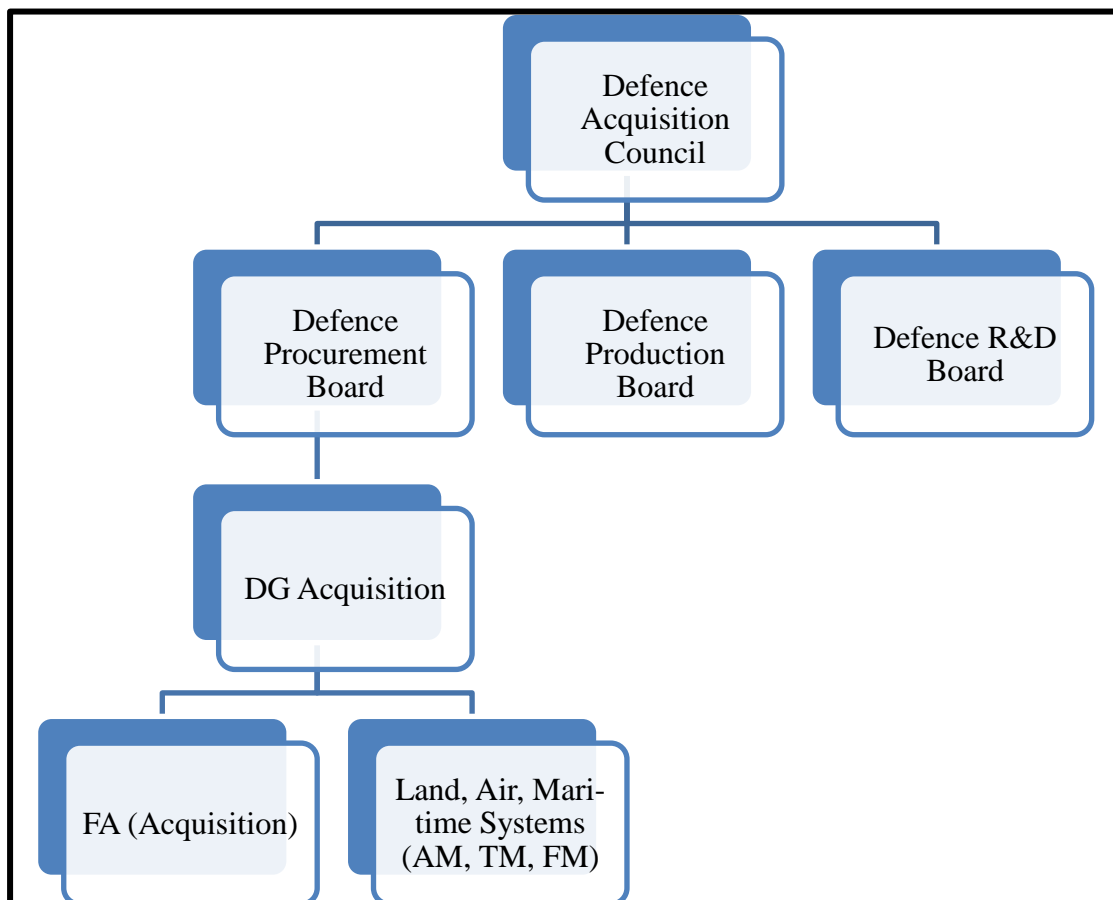
Source: Indian Defence Industry: An Agenda for Making in India (Chapter 7),

Behera (2016).

104. Each of the committees has commented on the various aspects of national defence, including indigenous defence production and self-reliance. The committees have followed each other's recommendations and build up upon these. While some may argue that the framework and outcome of these committees has been largely academic, the actuality is not exactly that. Number of reforms introduced since 1999 are attributed to the basic recommendations of these committees.

105. **Organisational Structure for Defence Capital Acquisition.** The capital acquisition organization which is the harbinger of 'Make in India' in Defence and Indian Army is an outcome of the recommendations of the GoM. This basic organization structure, devised nearly two decades back stands, with minor modifications, is as follows:-

Figure 3.1: Organization Structure for Defence Capital Acquisition/ Make in India



Source: Researcher's Knowledge/ Experience

Way to Go

106. While all other reports are yet to be de-classified, the Dhirendra Singh and VK Aatre committees report have been made public. The committees have been cautious and careful in not being overambitious with their recommendation. They have set a target of achieving 70% self reliance by 2027. Being in public domain, not only the government agencies but also the private agencies can monitor its implementation. It thus is open to public scrutiny and can ensure better accountability at all ends. DPP 2016 was an outcome of the recommendations of this report. DPP 2020, which is on the anvil, should now consolidate on the experience gained in the past five years since enunciation of '*Make in India*'.

DEFENCE INDUSTRY VIS-A-VIS IA

What Ails the Indian Defence Industrial Base (DIB)

107. **Cause and Factors.** Would it be an overstatement to say that the DIB in India is ill fated? The problems are aplenty and causes are evident. It is just the willingness of the stakeholders and drive of GoI which can help overcome all of these and turn the DIB around. Primarily, the root of the causes is historical in nature and then the monopolistic tendencies that have set in since. As has been explained, the defence manufacturing and R&D was confined to the DPSUs/ OFs and DRDO respectively since independence. The last two decades of liberalization is yet to yield the desired results because the trust is still amiss. The factors effecting the DIB, vis a vis IA, as brought out by Behera, can be enumerated as under:-

- (a) Archaic system of defence production.
- (b) Monopoly and inefficiencies with in DPSUs/ OFs.

- (c) Complacency within DRDO.
- (d) Separation of the DRDO from production agencies.
- (e) Comfort zone feeling within DPSUs/ OFs/ DRDO.
- (f) Intermingling of modernization, procurement and indigenization concerns within the MoD/ Army HQ.
- (g) Over exuberance of user towards the best product in the world.
- (h) Continuing trust deficit within the stakeholders.

108. **Inherent Technical Capabilities.** Colonel Sunil Zachariah, from DGQA, which deals with quality assurance, as also carries out the joint receipt inspections and is the Authority Holding Sealed Particulars (AHSP) for all designs of all weapons and equipment opines, *“The tech capabilities of indigenous manufacture are getting better through the Make-in India initiative of the GoI, however these capabilities do vary from sector to sector (OFB/ DPSU/ PSU/ Private firms). DPSUs like ECIL and BDL are much better off compared to OFBs. BEL initially were designated as ‘Navratnas’, but presently they too need to come up to the standards required in international competition. Private manufacturers like Reliance, TATA, Adani Groups are coming up in a big way. In case of OFB, lot of revamp would be required to raise their standards as they won’t stand anywhere in case they have to compete in global tenders. Like in case of ECIL fuzes, the detonics portion (Detonator & Reserve Bty, Electronic Kit) are still being imported from South Africa. In case of II tubes manufactured by BELOP, Anti veiling Glare Glass, MCP (Multi Camel Plate) & FOP (Fibre Optic Plate) are still being imported. PEL Hyderabad is importing Flare composition from Ukraine”.*

109. **DEFEXPO 2020.** Would it be correct to state that the defence industry in India and for India is going through a very confused phase? What has been stated by

the representatives of the US defence industry at the US India Business Council seminar on 06 Feb 2020 at the recently concluded DEFEXPO-2020 at Lucknow, bears testimony to that. A few statements during the seminar, worth reflecting, are as under:-

- (a) “There are bureaucratic hurdles which even the leaders of both the countries are unable to overcome”.
- (b) “Frank and honest conversation is required for improvement in the manufacturing/ defence production needs in India”.
- (c) “There will be no charity but plain business interests towards defence cooperation”.
- (d) “Offset policy needs improvement”.
- (e) “*Create a level playing field through DPP and DPM*”.

110. **Reaction of Indian Manufacturers to Indigenisation.** During course of interactions in the instant research effort, some significant statements made by representatives and experts from Indian industry are as under:-

- (a) Adani Defence representative opines the following:-
 - (i) “*The DPP is pretty restrictive, doesn’t help Indian industry, looks at only MoD aspects, not GoI aspects.*”
 - (ii) *The following are typical bottlenecks in the Indigenisation process:-*
 - (aa) *Licensing regime.*
 - (ab) *DPP.*
 - (ac) *FDI policy.*
 - (ad) *Taxation issues.*
 - (aa) *DRDO and DPSUs get undue advantage.*

- (iii) *Avoid flip flops in procurement cases, intent has to be to procure not merely lay down policies”.*
- (b) Bharat Forge (Kalyani Group) representative opines as under:-
- (i) *“The main bottleneck is non coherence in approach, with indigenous cell having a good intent but no control on the process or its procurement. Development are on NCNC basis and despite product meeting all the QR the order or demand by Army is not there.*
- (ii) *Has there been any project or product or system that has inducted in Army till date under make in India ..NO .it is still work in progress with miles to go ...”.*
- (c) L&T Group stated the following:-
- (i) *“In case foreign vendor is prime in Buy(global) program, taxes and duties Basic Customs Duty in India on imports and GST in India on deliveries of fully formed equipment do not allow Indian vendors to do the final Assembly, Integration, Testing and delivery to Indian MoD on behalf of the foreign vendor. This is a hurdle to “Make in India” initiative as the delivery of fully formed equipment from Indian vendor not only will increase indigenisation percentage but also develop skills in India for long term sustenance of the equipment”.*
- (ii) *We are executing a major Gun program where we have successfully demonstrated “Make in India”. Towards this, we have set up our own facility and supply chain of more than 500 Tier-1 suppliers. This infrastructure, supply chain, along with our technical and project management capabilities, has enabled us deliver Guns months ahead of contractual delivery date”.*

(iii) In an exclusive conversation with CNBC-TV18's Latha Venkatesh, the L&T Chairman, Mr AM Naik said that the private sector are not given many defence orders. About K-9 VAJRA order, he stated-

“This is the biggest contract we got for 100 field guns. This is a current version of field guns. There are four types of guns, one they have cancelled because it did not succeed. So the government said that they will add those 180 guns which were cancelled to this 100 when you come and deliver 50. Now we are ahead of schedule,” he said.

“Prime Minister (PM) inaugurated the gun factory but in less than one year – now recently the defence minister came to accept 51 guns. By then that 180 guns should have been ordered. Again there is no money, so this September we will close the factory which was opened 12 months ago. We are delivering the guns ahead of time,” he added.

(d) Taking cue from this very case of K-9 Vajra and Mr Naik's statement, OFB's Mittal asked for more collaborative and complimentary approach in Indian defence manufacturing. He says, *“L&T factory manufacturing K9 Vajra-a 155/52 SP Gun is on the verge of closure as per the media reports since it does not have any future orders beyond the order under execution. Similarly, there have been many claims of various production houses like TATA, Bharat Forge, Punj Lloyd, Jindal Steel etc to establish necessary manufacturing facilities while participating in any competitive bid under IDDM or Buy & Make (India). The fact remains that only one of the firm can win such order and infrastructure created by other organizations is going to be a financial stress on them without any gainful utilization”*.

(e) Punj Llyod representative opined, “Make in India is very good on paper. However, translation of ‘Make in India’ on ground leaves a lot to be desired”. Narrating the incident of ZU- 23 upgrade he stated that after completion of the CNC, the company waited for the contract for nearly three years, without any outcome. In the meanwhile the company has gone into NCLT proceedings.

(f) Zen Technologies representative stated, “*While there are enough projects listed in DGPP documents for indigenous design and development, pace of execution of most of these projects is so slow that it gives an impression that user is not really serious in these projects/ products and that they are listed in the documents just for the sake of it. Feasibility Studies in some cases are going on for years and have not reached anywhere near completion. So a developer is not sure whether he should commit his limited financial, material and human resources for the project*”.

(g) Datapath representative suggested the following steps:-

(i) Reduce size of DRDO and open the labs on 24 x 7 basis for young students/ entrepreneurs. Use the scientists available as faculties as well as mentors with various Class B city technical institutions.

(ii) Management of volume to make indigenization worthwhile exercise.

(iii) MoD, MHA and MEA should work towards generating volumes of high-quality equipment.

(iv) Speed-up decision making.

(v) Encourage local entrepreneurs with incentives.

(vi) Restriction/ duty free imports for R&D.

111. **R&D/ ToT: Opinion of Industry/ Experts.** In the previous chapter the R&D/ ToT aspects were covered holistically. The industry specific perspective vis-a-vis ‘*Make in India*’ is covered in this portion. Interaction with industry representatives and experts in the field bring out contradictory claims. Some of the major industry players like L&T, Bharat Forge and Zen technologies claim to undertake selective R&D, however, the entire industry is unanimous in confirming that core R&D towards army requirements is simply not feasible owing to budgetary constraints and even more due to non assurance of orders. The entire industry places commercial interests as their prime concern vis vis R&D. Experts opine that not only is the R&D quotient negligible with the private industry, it is so with the DPSUs and OFs as also with the DRDO. Only five of the nine DPSUs have patents/ copyrights to their credit. The overall scenario of R&D towards army requirements has been summed up very precisely by Colonel Zachariah (from DGQA), as under:-

- (a) *“None of the Indian manufacturers are earnestly dwelling into R&D for ensuring self reliance in critical Indian Army needs.*
- (b) *Most of them rely on ToT.*
- (c) *Reverse Engineering is done only in few fields, which itself is a long drawn plan which becomes ineffective with the change in technology.*
- (d) *As brought out earlier as there is no firm commitment given to any manufacturer hence none of the private Firms are dwelling in R&D.*
- (e) *However, DPSU/ OFB to some extent are doing it but not yielding much effective results.*
- (f) *The GSQR changes frequently, hence there is no clear cut focus as far as R&D is concerned”.*

112. Talking on R&D capital expenditure, Adani representative said, *‘The MoD is seeking and getting bids from 18 companies on a typical case of capital procurements. This is strange as there are not 18 defence manufacturers in the country. Hence, if all 18 invest into R&D, only one will get the order. What about the ROI for the rest?’*.

113. There are voices which say, *‘There is no point on doing R&D on pure Defense oriented equipment till it is promised that the same will be bought by the organization once proved. With the uncertainty in procurement cycle no one supports such kind of investments. We don’t have any such support from government. ToT in certain cases is real only when there is a bulk to be produced. It is commercially not viable for small quantities’*.

114. Datapath representative states, *“we deal in Satellite Communication Terminals. We were asked by BEL to provide ToT for our portable antenna systems for a program called BSS. Since the initial numbers were 600, it was feasible to do the ToT. Later the numbers were drastically reduced to mere 80 and thus the ToT plan could not materialize. **What Could Be Done** Since Satellite communication terminal are a dual use item the government should have authorized BEL to go ahead with the ToT and directed all agencies to place their likely requirements on BEL. It could have saved lot of money to government and a state-of-art technology could have been acquired. This, of course, could not happen and various agencies like NDRF/CPOs are buying such systems individually which are really not of the required quality and thus public exchequer is being wasted. ToT route should also be used for providing such systems to friendly nations under the extension of Line of Credit so that the acquisition of technology can be made more lucrative for Indian companies / PSUs”*.

115. During a recent interview with Major Gaurav Arya, on Republic World, Lt Gen Sanjay Kulkarni (retired), a defence expert, presently an advisor and consultant to OFB, admitted that till 2006, OFB had no R&D budget at all. However, the R&D budget has gone upto nearly 5% of the annual turnover. Ms Ruchi Garg, GM, BEL, also confirmed that the R&D budget has gone up to 8-10%.

116. In fact Mittal of the OFB echoed General Kulkarni's claims when he confirmed. 'OFB receives number of product technologies from DRDO on regular basis. Further, OFB also associates with DRDO during the development of any new product to manufacture the same as per design drawings provided by DRDO and also provides its input for better design and manufacturing of the product based on long manufacturing experience available with OFB. OFB also as a part of its R&D policy now has MOU with many other R&D agencies and labs of CSIR apart from various institutes of academic excellence like IITs, NITs and IISC. OFB has also been delegated with special powers for placing Contracts for Acquisition of Research Services (CARS) with an aim to pool up the available resources in the country for early development of new defence equipment for modernization of Armed Forces'.

117. **Offsets.** The offset policy in defence contracts was introduced for the first time in 2005. For the first ten years, the policy remained highly restrictive. It is in the past five to six years that the experience gained is being situated in the policy to make it more meaningful and gainful. The primary targets of the offset policy were two fold, as under:-

- (a) To get greater amount of FDI induced in India.
- (b) To boost the manufacturing sector, not necessarily defence industry alone by ensuring that the foreign companies buy back more from the domestic industry than they would have bought, but for the offset obligations.

118. As the data on the offsets is being compiled at the level of MoD, very less information is available in the open domain. According to Laxman Behera, “*there has been a missed impact of the offset policy on the Indian Defence Industry. On the positive side, the offsets seem to have made an impact on certain types of exports, which include the exports of civilian aerospace items (particularly parts and components), defence exports of the private sector and exports of BEL. On the negative side, offset has not been a catalyst in influencing FDI inflows, a key objective of the policy. Offset has also not been a catalyst in bringing ToT or meaningful manufacturing to the industry. The impact on exports is largely confined to parts and components of civil aerospace items, not the platforms. Considering that manufacturing and technology are the heart of an industry like defence, it is imperative that MoD focuses its policy accordingly*”. (Behera, 2016).

119. On Offsets, Datapath representative opines, “*It really does not address the requirement of ‘Make-in-India’.* With the diluted Offset clause, fewer opportunities exist. Also, the offset provisions need to put more emphasis on technology transfer and local manufacturing. The main consignments (at least beyond 30% of the total volume) must include items manufactured in India to an extent starting even 20% and ranging to 50% beyond midway. May be some technology transfer is accepted in lieu but that should be concurrent to the deliveries and much before payments are made. A committee of stake holders should have powers to buy from non-PSU and MSMEs their indigenously developed equipment as Mark I even if it meets basic requirements with commitment for improvement to Mk II. Nowhere in the world can anyone buy “Latest (a word not defined tangibly)”.

120. Interaction with BAE Systems representatives on Offsets was very fruitful. It was brought out that the current multiplier of 1-2% through offsets is an absolutely

non attractive proposition and simply does not make business sense. It was opined that the management of offsets clause in the DPP should be handled by domain experts to exploit its facets as also make the amendments as necessitated.

Army-Industry Interface

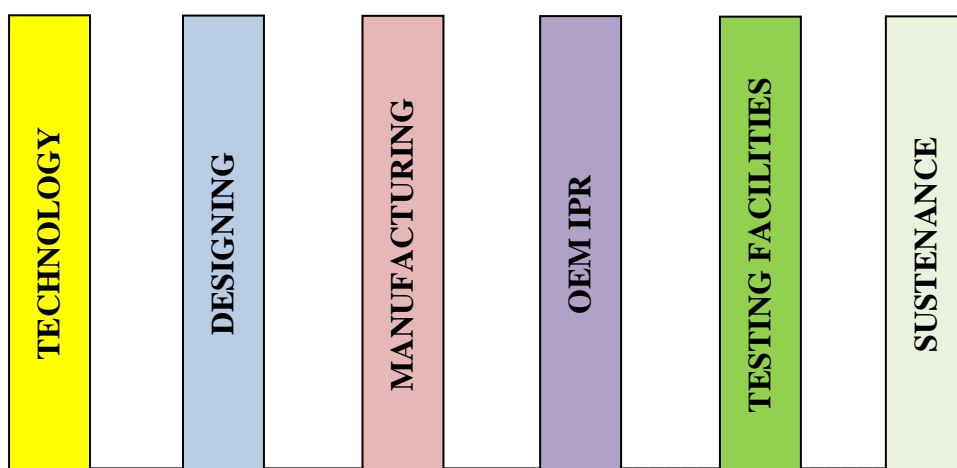
121. Though, promoting '*Make in India*' has been an agenda of the GoI towards self reliance but the results on ground do not speak much about what has been achieved. Dhirendra Singh committee had viewed that '*Make in India*' should not become assemble in India with no IPR and design control thereby perpetuating our dependence on foreign suppliers. They had emphasized on a progressive increase in the net indigenisation content. Has a conducive environment been thus provided towards this end in the past six years, is a matter of conjecture! Interaction with private domestic players, DPSUs and OFs reveals that indigenization of complex weapon platforms is still a far cry. The fact is that for every step taken forward, the entire process is thrown back several steps.

122. The industry is circumspect about the army commitments and army does not have confidence in the claims of the industry. The disconnect gets accentuated when the industry confirms that they are not willing to invest in core R&D unless they are assured of Minimum Order Quantity (MOQ).

123. **Pillars of '*Make in India*'- Indigenisation.** Army Design Bureau (ADB) under the Directorate General of Perspective Planning (DGPP) is the agency responsible to boost '*Make in India*' for Indian Army. Interaction with ADG ADB brought forth some very basic inputs. ADG opined that if the '*Make in India*' can be loosely confined to six pillars, viz. Technology, Designing, Manufacturing, OEM IPR, Testing facilities and Sustenance, may not be in the same order of prioritization,

then it is worth checking how many of these pillars can be met by the domestic defence industry to include the PSUs, OFs and private sector.

Figure 3.2: Prospective Pillars of Make in India- Indigenisation



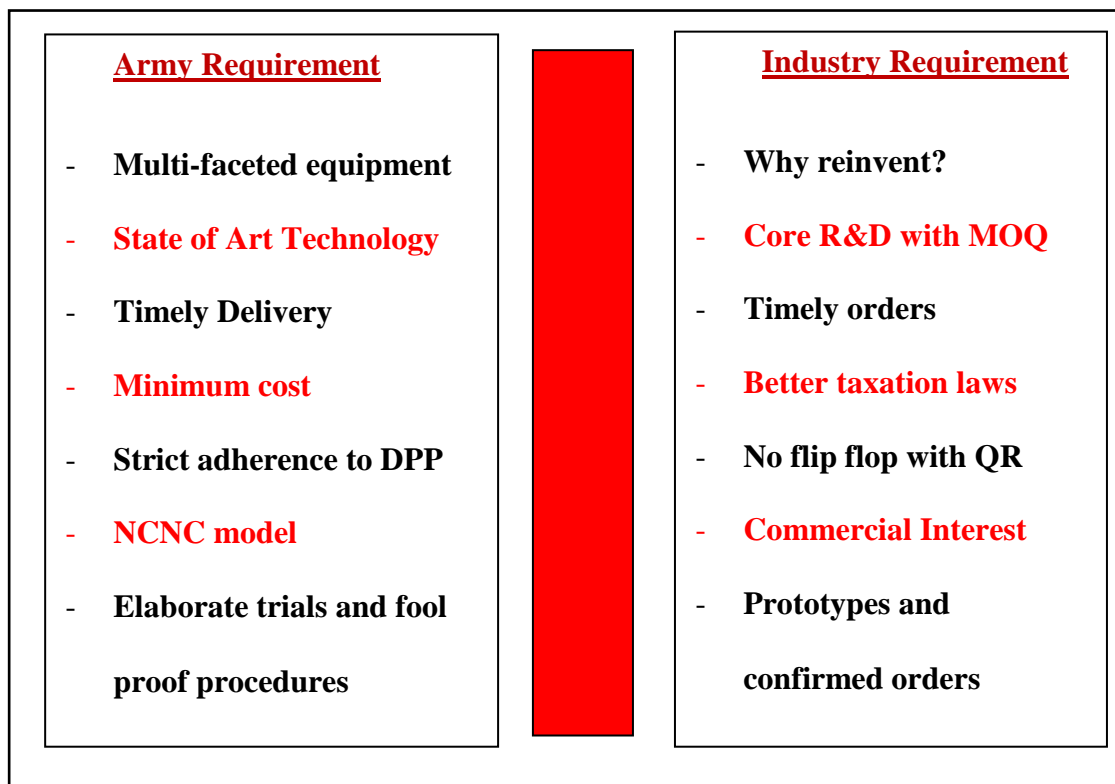
Source: Researcher's Inputs through Interactions

124. Some experts may argue that testing facilities and sustenance aspects are well established in DRDO/ DGQA and IA. Designing is hugely software driven and India is a bed rock of soft ware technology. Three major pillars having got addressed, India's foray into indigenization and defence manufacturing should yield better results. However, the fact remains that unless the technology is developed indigenously, the other five pillars do not follow the sequential path of indigenization.

125. A very important aspect that keeps getting overlooked is that the foreign defence industry is decades ahead of Indian defence industry. The foreign R&D has been monetized long back. But the Indian industry is still comparatively in the early stages. Hence, the onus is on the user, i.e. the IA to accept a product which is indigenously manufactured and is actually required and will suffice the needs. The world class foreign product may be the best but it may prove to be an aim plus for Indian conditions and hence may not be actually required. It needs to be accepted that the Indian industry needs some handholding till it matures in defence manufacturing.

126. **Army- Industry Disconnect on Make in India.** While both Army and Industry opine that they are pushing for ‘*Make in India*’, however, the same is not to be seen on ground or through the contracts as envisaged in the various committees on Defence in past two decades. The disconnect is because of the varying requirements, as the budgetary allocations reveal and as defence expert Amit Cowshish says, “Does the GoI have enough money to cater to the capital procurements. This can be seen from the projections vs allocations figures. Also, projections are too fantastic to be met. Realistic projections like the ones made in the Indian Coast Guard plans of XI Plans are executable”? This disconnect can be represented by the model, as under:-

Figure 3.3: The Basic Disconnect between Army-Industry Requirements



Source: Researcher's Knowledge/ Experience

MODERNISATION OF INDIAN ARMY

Information on 'Modernisation of Army' was given by Raksha Rajya Mantri Shri Shripad Naik in a written reply to Shri Manoj Kotak in Lok Sabha on 20 Nov 2019. The same is reproduced as under:-

“Modernisation of the Army is a systematic process undertaken through a Fifteen years Long Term Integrated Perspective Plan, Army's Five Years Capital Acquisition Plan and the Annual Acquisition Plan (two year roll on plan). The modernisation process aims at keeping the Army in a state of operational readiness and optimally equipped with modern weapon systems. The budget allocation for modernisation of defence equipment is utilized to meet the urgent operational requirements of the Defence Forces and for acquisitions of contemporary systems based on the planned priorities of the Defence Forces.

Government is committed towards indigenization and self-reliance in the defence sector. The Defence Procurement Procedure (DPP-2016) accords the highest priority to procurement under Buy Indian (Designed, Developed and Manufactured) (IDDM) category and acquisitions through “Buy” and/or “Make” from Indian vendors. The “Make” procedure has been simplified to ensure increased participation of Indian industry.

During the last three financial years (2016-17 to 2018-19), 149 capital acquisition contracts have been concluded out of which 91 contracts have been placed on Indian vendors for procurement of defence equipment”.

Source: Press Information Bureau, Delhi/ GoI/ MoD, 20 Nov 2019 5:40 PM

Modernisation, Indigenisation and Procurement –while seemingly similar are very distinct with separate connotations for ‘Make in India’ and IA

Where is the Money?

127. It is worth contemplating, whether there is enough money available to modernize Indian Army through ‘*Make in India*’ or otherwise. While ‘*Make in India*’ is a wishful thinking towards reaching the goal of self reliance for the Indian Army, the moot question is whether there is enough time with the army to await the industry to gear itself up with the necessary technologies for meeting the immediate operational requirements as also modernize itself with the state of the art weaponry or there is luxury of time to pool in money and resources and let the domestic industry come up with the required technologies and weaponry. This debate is akin to the customary Guns vs Butter argument with the economists.

128. As Desouza states, ‘*No, the defence industry is not gung-ho about MII because not many orders have been placed on them compared to what was expected. This is primarily due to the **limited Defence budget**. The large indigenous projects such as FRCV, MRSAM etc have not taken off apparently due to limited indigenous R&D capabilities and delays in selecting the Indian SP*’.

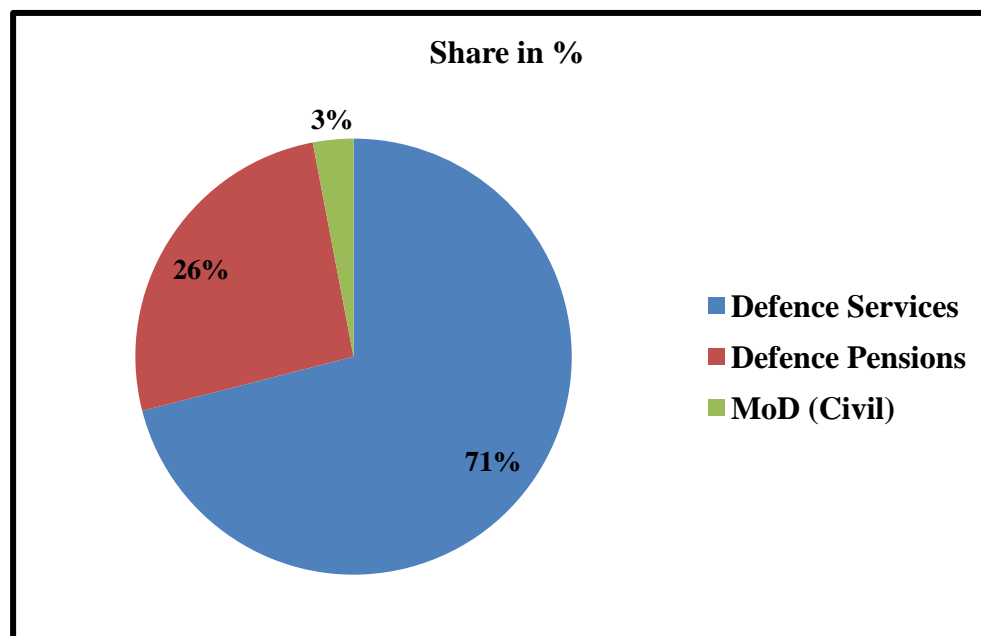
129. It will be worthwhile to analyse the modernization of the IA and ‘*Make in India*’ through the lens of IDSA briefs on the two defence budgets of FY 2019-20 and FY 2020-21.

Defence Budget FY 2019-20 (IDSA Brief on Defence Budget 2020-21 Refers)

130. There has always been a huge shortfall in the allocations vis-a-vis the projections for the defence budget. Someone falls short on doing the homework- Either the Services or the Department of Finance. Or maybe it has become a trend to project exorbitant, to at least get something worthwhile. The three armed forces had projected a consolidated shortfall of Rs 1,12,137 crore, or 30 per cent of their total

requirement, exclusive of projections by the DRDO. The main constituents of the MoD budget are as under:-

Chart 3.1: Share of MoD Budget



Note: Out of MoD's total budget, close to 60% is spent on salary and pensions of nearly 4.9 million personnel (3.1 million are defence pensioners, 1.4 million are uniformed and 0.4 million are defence civilians)

Source: IDSA Brief on India's Defence Budget 2019-20,

by Laxman Kumar Behera, 08 Jun 2019

131. MoD thus has an uphill task of managing within the limited resources the onerous requirement of modernization through or without Indigenisation. After salaries and pensions, the next important expenditure is sustenance of the current and then comes the modernization, i.e. capital budgeting. Allocations under the capital budget are barely one fifth of the allocations under the sustenance head. And it is the capital budget which is required to cater to acquisitions, new projects, modernization, indigenization and thus 'Make in India'- more or less in that sequence. A look at the allocations is given in the tables below:-

Table 3.2: Service wise Allocations under Defence Budget 2019-20

<u>Ser No</u>	<u>Head</u>	<u>Amount in Crores</u>	<u>% of Allocation</u>
(a)	Army	1,71,023	56
(b)	Navy	45,368	15
(c)	Airforce	68,949	23
(d)	DRDO	19,021	6
(e)	OFs	935	<1

Table 3.3: Capital vs Revenue Allocations for Army, Defence Budget 2019-20

<u>Ser No</u>	<u>Head</u>	<u>Figures</u>
(a)	Revenue Expenditure (in Crores)	1,41,501
(b)	Capital Expenditure (in Crores)	29,522
(c)	Revenue + Capital (in Crores)	1,71,023
(d)	Revenue as % of Total Allocation	83
(e)	Capital as % of Total Allocation	17

Source: IDSA Brief on India's Defence Budget 2019-20,

by Laxman Kumar Behera, 08 Jun 2019

132. **Impact on Modernisation.** Modernisation of the military is a continuous process. The Indian armed forces keep working despite the resource crunch to meet the stated percentages of **30%: 40%: 30% respectively for vintage: current: futuristic technology weapons and equipment.** In the present context these percentages have apparently gone awry and hence the need to divert more funds towards modernization. The tables below indicate a very miniscule portion of the budget being attributed towards modernization.

Table 3.4: Modernisation Budget of Indian Army

	<u>2018-19</u>	<u>2018-19</u>	<u>2019-20</u>	<u>2019-20</u>
<u>Stage</u>	BE	RE	BE (Interim)	BE
<u>Amount in Crores</u>	21,211	21,166	22,951	22,951

Table 3.5: Head wise Distribution of Army's Modernisation Allocation

<u>Modernisation Head</u>	<u>2018-19 (BE)</u>	<u>2018-19 (RE)</u>	<u>2019-20 (BE)</u>	<u>% Increase in 2019-20 over 2018-19</u>
Aircraft & Aero Engine	1813	2369	2115	16.7
H&MV	1972	1732	2128	7.9
Other Equipment	17198	16993	18562	79
Rolling Stock	128	2	50	-61
Rashtriya Rifles	100	70	95	-4.7
Total	21211	21166	22951	8.2

Source: IDSA Brief on India's Defence Budget 2019-20,

by Laxman Kumar Behera, 08 Jun 2019

133. **Make in India in Defence.** Some initiatives put forth by FM are as under:-
- Payment platform and ease of access to credit for MSMEs.
 - Abolition of 'Angel-Tax' for Start-Ups
 - Lower corporate tax from earlier 30% to 25% for companies with an annual turnover of up to Rs 400 crore (earlier threshold was Rs 250 crore) is a key incentive, particularly for private companies in the defence sector.

- (d) Increase in minimum public shareholding in listed companies from 25% to 35%. GoI can thus raise additional resources by liquidating the DPSUs equity holdings. The revenue so accrued can be used towards defence capital expenditure.
- (e) Strategic Disinvestment of Central Public Sector Undertakings (CPSEs) including DPSUs like BEML.

Defence Budget 2020-2021 (IDSA Brief on Defence Budget 2020-21 Refers)

134. **Allocations under the Defence Budget 2020-21**. Compared to figures in Table 3.3 the sub allocations within Army for Budget 2021 are as under:-

	<u>FY 2020-21</u>	<u>FY 2019-20</u>
(a) Revenue Expenditure (Rs in Crore) -	1,46,941	1,41,501
(b) Capital Expenditure (Rs in Crore) -	32,474	29,522
(c) Total (Rs in Crore) -	1,79,415	1,71,023
(d) Revenue Expenditure as % of Total -	82	83
(e) Capital Expenditure as % of Total -	18	17

135. The following two tables indicate the service wise allocations and MoD allocations (Defence Budget) respectively.

Table 3.6: Service wise Allocations under Defence Budget 2020-21

Ser	Head	Amount in (Cr)	Allocation %
(a)	IA	179415	56
(b)	IN	49623	15
(c)	IAF	73245	23
(d)	DRDO	19327	6
(e)	OFs	1433	<1

Table 3.7: Allocations under Defence Budget 2020-21

Year	Defence Services	MoD (Civil)	Pension	Total
2018-19	2,90,802 (72)	10,881 (3)	1,01,775 (25)	4,03,457
2019-20 (BE)	3,05,296 (71)	13,635 (3)	1,12,080 (26)	4,31,011
2019-20 (RE)	3,16,296 (70)	14,714 (3)	1,17,810 (26)	4,48,820
2020-21 (BE)	3,23,053 (69)	14,500 (3)	1,33,825 (28)	4,71,378

Source: IDSA Brief on India's Defence Budget 2020-21,

by Laxman Kumar Behera, 04 Feb 2019

136. **Share of Army.** Among the three forces, army has, however, the lowest capital share. The capital share has been declining, from a high of 26% in 2007-08 to 18% in 2020-21. Increase in the share of revenue expenditure is a cause of immense concern for the army. This is inhibiting the policy shift and all other efforts towards the modernization and indigenization for which greater capital expenditure is necessitated.

137. **Strategy towards Modernisation through Indigenization.** If self reliance, indigenisation and modernisation need to be achieved as stated goals then the treaded path has to be left and out of the box solutions need to be sought even if such steps invite opposition. Some suggestions are as follows:-

- (a) As some experts have suggested, “*The ISRO/ Toyota, model should be followed, say out of 10 items orders of 2 – 3 items are given to 2/ 3 specific firms by a committee, after price negotiation and clearance of quality related aspects. Thus the associated Company/ Manufacturer gets a firm commitment and ensures delivery of quality stores to the order placing authority which is not possible in open tenders with LI criteria*”. As on date such an approach is unthinkable. As Paneer Selvam from DRDO mentioned, ‘need to wait and see how SP mode is getting materialised’.
- (b) ‘Made in India’ with full TOT is an ideal option in immediate future but as explained in the previous chapter this approach is writ large with the huge disadvantage that supplier will provide technology of an older version and not the latest. And that too with shortcomings which will come to light at a very late stage. Thus, causing penalties in terms of money, time and anxiety to the exchequer and to the user both. Not much can be done at that later stage except to go for a fresh contract for the shortcomings.
- (c) Specific and limited areas are to be identified which should be given full boost as done in case of ISRO. Time based projects to be formulated involving permanently based team for that specific period/ time.
- (d) It should be Government to Government dealing. This route reduces timelines for procurement/ induction of the weapon system, ruling out the requirement of GS evaluation etc.
- (e) A consortium of private industries and DPSU should be identified for realizing the equipment through TOT and MTOT.

WAY FORWARD

138. From the DRDO to the foreign industry (which ends up getting the major share besides the DPSUs/ OFs), seeking a level playing field and OFs/ DPSUs claiming that they have now undertaken major R&D, it is immensely difficult to pinpoint one single factor which if improved can resolve the quandary that '*Make in India*' for IA, is presently, in.

139. While DPSUs have become integrators in big way over the years, it is the domestic private industry too following the same path. This approach has to be challenged and path to true '*Make in India*' (self reliance through indigenization) has to be adopted through the desired CAPEX into core R&D. A road map for this needs to be drawn involving all stake holders, to be duly monitored through independent accredited agencies.

140. Notwithstanding what Raghuram Rajan pitched for, the stakeholders were found to be unanimous is claiming that '*Make for India*' is an interim measure and is certainly not the goal towards self reliance. It is '*Make in India*' all the way, and all concerned need to focus only towards this aspect with the aim to bring about its actualisation through a roadmap.

141. The GoI is now orienting its efforts towards realizing this necessity. The earlier the policies are set up to recognize this as a specialist task the better and more successful would be the implementation. Private industry has to be given the necessary assurances. At the same time the DPSUs and OFB have to be made competitive in the open environment. DRDO should develop and sell its idea to the highest bidder. GoI also has to accept that export of arms is a necessity for successful defence industrialization towards self reliance.

CHAPTER IV- PROCEDURES AND BOTTLENECKS

‘Self-reliance is a major corner-stone on which the military capability of any nation must rest. It is therefore of utmost importance that the concept of ‘*Make in India*’ remains the focal point of the defence acquisition policy/ procedure. There is a need to institute enabling provisions for utilisation and consolidation of design and manufacturing infrastructure available in the country’

---- Preamble, DPP 2016



DEFENCE PROCUREMENT PROCEDURE (DPP)

Business So Far

142. **Make in India: Implementation in MoD/ IA.** At the level of MoD, it is the Department of Defence Production (DDP) which is nodal to ‘*Make in India*’ in Defence. Its website *makeinindiadefence.gov.in* gives out the recent activities and initiatives undertaken towards ‘Ease of Doing Business’, iDEX, ‘Make Projects’ and ‘Indigenization’. In the Indian Army, it is the DG PP/ ADG ADB which is the policy making authority. The implementation for capital budgeting is undertaken by the DGWE and on the revenue front it is done by the MGO’s Branch. In addition, the execution of the complete process also involves the Acquisition Wing of the MoD. The DOI under MGO’s Branch/ DG EME caters to the indigenization of identified spares and smaller parts of major weapon platforms.

143. **The Pecking Order.** As per DPP 2016/ Chapter 1, as amended, Capital Acquisition schemes are broadly classified as, ‘Buy’, ‘Buy and Make’ and ‘Make’. Under the ‘Buy’ scheme procurements are categorised as ‘Buy (Indian - IDDM)’, ‘Buy (Indian)’ and ‘Buy (Global)’. The three categories under the ‘Buy’ scheme refer to an outright purchase of equipment. Under the ‘Buy and Make’ scheme, the procurements are categorised as ‘Buy and Make (Indian)’ and ‘Buy and Make’. The two categories under ‘Buy and Make’ scheme refer to an initial procurement of equipment in Fully Formed (FF) state in quantities as considered necessary, from the appropriate source, followed by indigenous production in a phased manner through comprehensive Transfer of Technology (ToT), pertaining to critical technologies as per the specified range, depth and scope. However, a very important point to be noted is if DPP categorically distinguishes between Procurement and Manufacturing?

144. Though, indeed, the DPP itself promotes ‘*Make in India*’ through the decreasing order of priority, as per the categories as under (**para 1, chapter 4, DPP 2016 refers**):-

- (a) Buy (Indian - IDDM).
- (b) Buy (Indian).
- (c) Buy and Make (Indian).
- (d) Buy and Make.
- (e) Buy (Global).

145. **DPP Versions.** The DPP was formulated in 2002 for the first time. Since then it has been revised seven times in 2005, 2006, 2008, 2009, 2011, 2013, 2016. In addition, two major amendments have been issued to the DPP 2016. And now, the DPP 2016 is under amendment and DPP 2020 is likely to be announced sometime during the year. It may thus be seen that DPP has been evolving over the past two decades and it remains a ‘Work in Progress’. It is the binding document for defence procurement under capital head. Desouza describes the versions in a very candid manner when he states, ‘*While the Govt issued DPP 2016 with a focus on enabling the ‘Make in India’ initiative, very minimal changes were introduced in it from the earlier versions. The greater stress on Indigenous Designed Developed and Manufactured (IDDM) in fact steered it more towards the DRDO sponsored ‘Made in India’ concept. The Strategic Partnership chapter issued later in 2017 did introduce a major shift towards allowing private firms to take on production of large systems which were previously only entrusted to DPSUs and OFs. But the complexities in selection of suitable SPs from a limited range of one or two well established ones such as L&T and Tatas and many new, inexperienced ones such as Reliance Defence, Adani, Kalyani, Mahindra & Mahindra etc as well as the inclusion of DPSUs have*

bogged the process down. After the highly criticized nomination of Reliance as the defence offset partner for the Rafale fighter aircraft order, it has taken almost three years to select L&T and MDL as SPs for the P75I submarine project’.

146. During interaction, Amit Cowshish was very candid in his views on the DPP and ‘*Make in India*’. He asked whether ‘*Make in India*’ per se has been defined? He also mentioned that DPP is writ large with contradictions and redundancies. Also, in the present context, unless the organization looking after ‘*Make in India*’ is dedicated and disassociated with service HQs, not much can be achieved. This point needs to be taken with caution and due consideration. Apparently, some work has been done on a defence acquisition organisation which needs to be an independent identity having representation of all stake holdes. This case may be relooked at and debated to arrive at a viable option.

Views: Industry Stake Holders

147. Giving out the foreword to the DPP 2016, Late Shri Manohar Parikar, the then Raksha Mantri stated, “*At this juncture, I would like to emphasise on the importance of two key aspects: probity and trust. It is imperative that the stake holders of DPP 2016 do not lose sight of these aspects while implementing the DPP 2016, and at the same time ensure that best-in-class weapons and equipment are made available to our armed forces at the most competitive prices*”. These words sum up the essence of the DPP. During interactions with the stake holders, varying views were presented on DPP. These are, summed up as under:-

(a) **MoD and Army HQs.**

- (i) Enablers are provided in the present DPP and the proposed DPP 2020 in the form of incentives and weightages.

(ii) With the DPP making the GSQR procedure stringent, hardly any case has fallen off owing to shortfall in GSQR.

(iii) Periodic interactions are held with the industry bodies like CII, FICCI and SIDM to ensure that the industry perspective is well considered.

(iv) DPP empowers '*Make in India*' but procedures do not.

(b) **DGQA/DRDO.**

(i) Current Government policies including DPP, aim to promote Make in India and facilitate indigenous manufacturing. Various schemes have been launched by the government with assistance from DGQA such as Green Channel policy, Third Party Inspection (TPI), utilization of proof ranges by Indian manufacturers, DTIS, IPR, certification by DGQA for 'FIT' equipment to promote exports.

(ii) The MAKE II initiative by the Government is the right step in the direction for '*Make in India*'.

(iii) While stating that the DPP only partially assists in '*Make in India*' for IA, DRDO representative did not have any further suggestions.

(c) **Domestic PSUs/ OFs.**

(i) BEL representative opined that DPP has been formulated to facilitate '*Make In India*', however because of lack of indigenous technologies and limited offer by foreign OEMs for ToT, it is yet to be successfully exploited.

(ii) OFB representative stated that the current DPP 2016 certainly incorporated provisions supporting the initiatives of '*Make in India*' by

prioritizing routes of procurement with IDDM as the most preferable route. The results, however, of such enabling procedures are yet to be seen on ground, as India continues to hold the dubious distinction of being the largest importer of defence products. It is understood that DPP 2016 is again under revision to make it more supportive to the initiative of '*Make in India*' based on wider stakeholder's suggestions. Certain steps as under in my opinion can facilitate the process of '*Make in India*' in a better manner:-

(aa) There is a need to establish infrastructure with various organizations whether in public or private in a complimentary mode to each other rather than competitive mode. Since, duplicate infrastructure created with no assurance of continuous future loads of identified products for which the infrastructure has been created shall only result in national wastages which otherwise could be better utilized. For example, L&T factory manufacturing K9 Vajra- a 155/52 SP Gun is on the verge of closure as per the media reports since it does not have any future orders beyond the order under execution. Similarly there have been many claims of various production houses like TATA, Bharat Forge, Punj Lloyd, Jindal Steel etc to establish necessary manufacturing facilities while participating in any competitive bid under IDDM or Buy & Make (India). The fact remains that only one of the firm can win such order and infrastructure created by other organizations is going to be a financial stress on them without any gainful utilization.

(ab) There is no policy at present for identification of products to be indigenized. As a result, each of the manufacturing organization with profit motive wants to encash low hanging fruits i.e. the product already being manufactured in India in Govt/ Public sector units. While this may help a little in bringing down the cost of procurement for Indian Army, as a matter of fact it really does not help in any manner in reducing exports which otherwise should be the main objective. The basic aim of the whole exercise is supposed to be identifying new products to be made in India and not identifying the products already being manufactured in India for diversion to corporate houses.

(ac) The various organizations with profit motive look for importing sub-systems through various means and act as prime vendor and aggregator by finding flaws in the procurement procedures and project their product as indigenous product with required percentage of indigenous contents. This also actually does not help in reducing imports or the real spirit of *Make in India*.

(d) **Domestic Private Industry.**

(i) A new procurement category should be created which covers projects where private Industry develops prototypes under an assurance that such prototypes would be tested and once the prototypes are successful, confirmed orders will be placed for certain quantity.

- (aa) The price proposal in the RFP response will cover the pricing for prototyping and serial production.
- (ab) Proposal will include the Indigenous content (IC), ToT element (if any) and Foreign Exchange content.
- (ii) GoI needs to undertake handholding of army equipment manufacturers.
- (iii) DPSUs/ OFs should not get the orders so easily. They should compete on a level playing field with the private domestic entrepreneurs.
- (iv) Meanwhile, Zen technologies suggested very pertinent proposals to be included in the subsequent DPP versions. A sample set of proposed Amendments to the DPP on Make aspects proposed by Zen Technologies are placed at **Appendix 'B'**.
- (e) **Foreign Industry/ MNCs.**
 - (i) Big projects need Foreign OEM's ToT. GoI should enlarge policy to encourage this. Percentage of IC should be reduced and progressively increased after few years.
- (f) **Experts/ Academicians.**
 - (i) Uberoy from ADTL, comments on DPP efforts in promoting 'Make in India', *'While the concept is a good one, its implementation could be more efficient; the 'Make' programmes of FICV & FRCV are case in point'*.
 - (ii) On the same aspect, Desouza opines, *'While the Govt issued DPP 2016 with a focus on enabling the Make in India initiative, very minimal changes were introduced in it from the earlier versions. The*

greater stress on Indigenous Designed Developed and Manufactured (IDDM) in fact steered it more towards the DRDO sponsored 'Made in India' concept. The Strategic Partnership chapter issued later in 2017 did introduce a major shift towards allowing private firms to take on production of large systems which were previously only entrusted to DPSUs and Ordnance Factories. But the complexities in selection of suitable SPs from a limited range of one or two well established ones such as L&T and Tatas and many new, inexperienced ones such as Reliance Defence, Adani, Kalyani, Mahindra & Mahindra etc as well as the inclusion of DPSUs have bogged the process down. After the highly criticized nomination of Reliance as the defence offset partner for the Rafale fighter aircraft order, it has taken almost three years to select L&T and MDL as SPs for the P75I submarine project'.

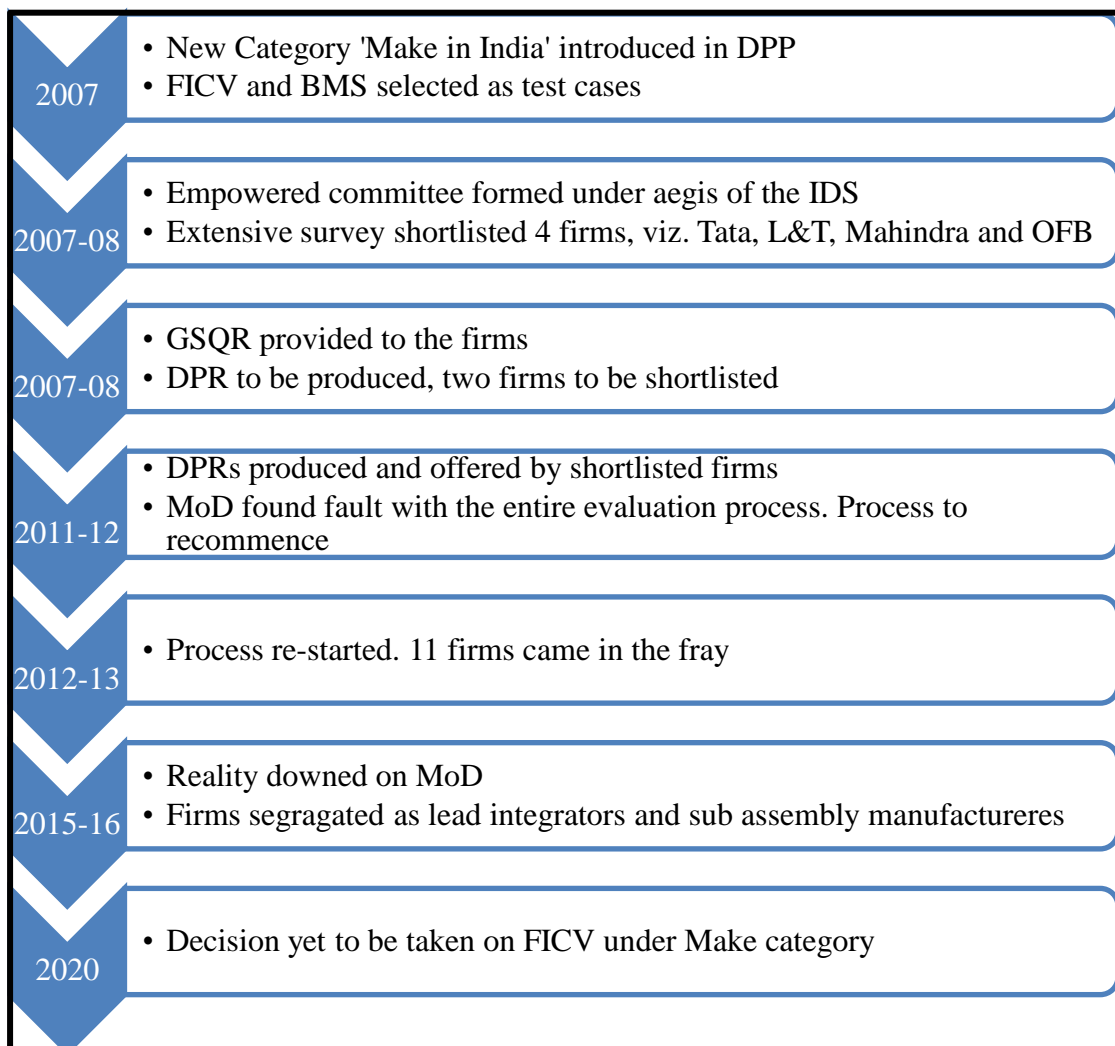
INDIGENISATION AND DEFENCE MANUFACTURING ECOSYSTEM

Stakeholders for 'Make in India' in IA

148. Defence acquisition is not a standard open market commercial form of procurement and has certain unique features such as supplier constraints, technological complexity, foreign suppliers, high cost, foreign exchange implications and geo-political ramifications. While maintaining highest standards of transparency, probity and public accountability, a balance between competing requirements such as expeditious procurement, high quality standards and appropriate costs needs to be established. As a result, decision making pertaining to defence procurement remains unique and complex.

149. **FICV Imbroglia**. GoI/ MoD seems to be doing all correct but to no avail. It will be worthwhile to understand the dichotomies and contradictions through some examples available in public domain. Dalip Bhardwaj states that each version of DPP is a massive improvement over the previous version. However, the interpretation till date leaves a lot to be desired. When the Make in India category was introduced in DPP 2007, it was hailed as a pancea for all woes pertaining to defence manufacturing. The figure below giving out the flow of events in the case of FICV project highlights the fiasco that has happened.

Figure 4.1: The FICV Imbroglia



Source: 'Make in India' in defence sector: A distant dream by Dalip Bhardwaj, Warfare, 07 May, 2018

150. The project today is so penalty ridden in terms of cost overruns, time overruns, resource overruns that it is simply embarrassing for everyone associated with that project. During interaction with all domestic industry representatives this particular case was brought forth as an example of why and what is not correct with the defence procurements and manufacturing in India.

151. **Procedural Bottlenecks.**

(a) Zen Technologies representative opines, 'While there are enough projects listed in DGPP documents for indigenous design and development, pace of execution of most of these projects is so slow that it gives an impression that user is not really serious in these projects/ products and that they are listed in the documents just for the sake of it. Feasibility Studies in some cases are going on for years and have not reached anywhere near completion. So a developer is not sure whether he should commit limited financial, material and human resources for the project'.

(b) Datapath representative has put forth the following issues for consideration:-

(i) **Taboo.** As brought out earlier, it is the suppliers who are making good use of veterans but not our own organization. Veterans are treated as 'Untouchables' and most of the time they are not welcomed to discuss any project/ problems/ likely solutions. This also results in non-practical QRs and rounds of retendering.

(ii) **Time-Line,** The procurement cycle and the timeline is frustrating which foreign OEMs don't endure and thus they are not ready for investing in R&D to meet local requirements or even promoting indigenization. They are not sure of their returns and neither

are the Indian companies ready to block their investment for so long. There are examples where Indian companies have invested time and money and the tenders have been retracted. Notable examples are TCS, BMS, FICV. Any company who have invested in these programs would not like to come back for such programs where they have lost crores of rupees. Even smaller programs have sometimes resulted in loss of colossal amount of time and money due to the cancellation of the process.

(iii) **DRDO and DPSUs**. Preferential treatments of such organizations result into loss of enthusiasm by private players. Most of the time these organizations increase the chain of decision making and thus 'time and cost' without any worthwhile contribution. In fact, size of DRDO should be reduced to bare minimum requirements may be to be work on strategic technologies of missiles etc and not for doing R&D on 'High Altitude Food, Broiler Animals' etc or on the systems those are already available in the world market through indigenization or ToT.

(iv) **Sample Size for Trials and Evaluations**. The sample size in the projects under various schemes (Make II) should be the smallest possible as a large number of these projects are undertaken by MSMEs who may have a good know-how but no funds to create more than one prototype. There is a need to look into the compensation for those whose prototypes have been cleared but could not make to L1. This will promote indigenous developments.

(c) Representative of Adani Defence brought out the following shortcomings in the procedure, without elaborating much:-

- (i) Licensing regime.
- (ii) FDI policy.
- (iii) Taxation issues.
- (iv) DRDO and DPSUs get undue advantage.

(d) Kalyani group representative stated that GoI / MoD agencies like OFs, DGOS hold all the equipment. Even if the domestic industry seeks an outdated or a condemned weapon platform or equipment for its own understanding, it becomes a major issue and clearances are simply not forthcoming, e.g. barrel of a 155 mm Gun system to Bharat Forge, ammunition for trials to any domestic manufacturer. In comparison the South Korean firm Hanuwah could bring a Gun system from the South Korean Army for trials in India.

(e) **Domain Expertise.** The service headquarters should avoid flip flop of the QR. In QR formulation the personality of the changed competent authority should not prevail. Also, the field of acquisition should be made a domain specialist job profile.

(f) **Accountability.** There has to be a system of accountability of the individuals involved in the procurement process. As on date, if nothing happens in a complete tenure of an individual, none is questioned.

(g) **Training.** It is also seen that no formal training is imparted to the individuals entering the domain of procurement/ acquisition which is a highly specialised field. All training happens on the job. And when the job is limited to 2-3 years, as in the case of IA, there is very less time available to deliver.

(h) **CapEx Capability.**

(i) DPP assists in Make in India initiative by providing options of ‘IDDM, Make I and Make II’ category projects, however unless projects are sponsored to Academia/ Industry partnership by Forces/ GoI for R&D into niche technologies, it may not give actual results. Funding for good projects may be required.

(ii) Adani and Punj Lloyd representative stated that Make in India can happen in software based projects. Very difficult in hardware as the capex is huge and assurances and hence expected ROI is circumspect.

(i) From the inputs received, it may be inferred that the systems in India are yet to be full enablers for ‘*Make in India*’. And GoI/ MoD is not realistic in approach and conduct.

152. **Views of MoD Elements.** While industry has its own views owing to the several reasons experienced by them, the MoD elements have certain counter views, as discussed in the succeeding paras.

(a) **MoD/ Army View Point.**

(i) It is seen that at the RFI stage the vendors are not providing the required degree of inputs.

(ii) Assurance to vendors can be given if and only if they prove that ToT is available with them.

(iii) It is seen that there is infighting amongst various companies. This leads to great amount of delay.

(iv) The schedules in RFP are fixed as per the RFI response but because RFI responses are not very realistic and hence the RFP time periods appear fantastic to the vendors.

- (b) **DGQA Opinion.** DGQA representative opines, as under:-
- (i) Under DTIS (Defence Testing Infrastructure Scheme) 75 % aid is being given by the Government to set up common testing facility in specified region.
- (ii) Financial support to MSMEs in ZED certification scheme, inculcating zero defects and zero effect practices in manufacturing processes while ensuring continuous improvement. The subsidy provided by the Government would be 80%, 60% and 50% for micro, small and medium enterprises respectively.
- (iii) **Initiative and Response of PSUs/ OFs.**
- (aa) **BEL.** IA has to undertake project in small phases instead of planning total indigenization in one go. During test bed phase, to expedite the implementation, evaluation process must be simpler. After successful implementation of test bed also, project must be implemented in phases. There can be a technical branch for project management where tenure of officers can be on long term basis till completion of a project as transition of officers also impact execution due to frequent change in the thought process of individual resulting in requirement /Scope creep.
- (ab) BEL is exporting WLR Radar which has been supplied to IA. Our policy is to invest every year almost 9-10% of our revenue in R&D not withstanding whether Export target has been achieved or not.

(ac) **OFB**. In general Army perceives Make in India as Make by private sector. Private sector seems to be taking time to prove it's credentials. OFB's capacities can be utilized and product realization will be more if Army prefers OFB in their Make in India initiative.

(ad) **BRAHMOS**. As on date, the complete platforms systems, ground support systems, test equipment, handling equipment, and storage technology is 100% Indian. The missile components right from raw material stage are being manufactured in India. The current ratio of indigenization is 70% and is likely to go beyond 80% in coming years. Substantial improvement has taken place since launch of 'Make in India'. More than 200 industries are involved in manufacturing of system from raw material stage.

153. **Enhancing Indigenisation**. DGQA Expert in the field consolidates the suggestions in this regard as under:-

- (a) Formalization of the future requirements of IA for next 15 years.
- (b) Committee with permanent members from all stake holders and related Government agencies to be formed till the completion of the assigned projects.
- (c) Committee to ascertain credibility of the concerned Firms after which the price negotiation to be done along with aspects related to quality acceptance criteria (Korean model) instead of L1 tendering.
- (d) Firm order to be placed on the firm keeping future requirements of 15 years.

- (e) The shortlisted Firms to also follow the same procedures for their sub-contract/sub firms/ Manufacturers.

154. Adani Defence representative responds by saying, “Avoid flip flops in procurement cases, intent has to be to procure not merely lay down policies”.

155. GoI/ MoD initiatives to boost indigenization:-

- (a) Establishment of Defence Investor Cell
- (b) Establishment of Defence Industry Corridors
- (c) Liberalisation of Licensing Policy
- (d) Availability of existing Test facilities to vendors
- (e) Defence and Aero Expo to encourage exports
- (f) Innovation for Defence Excellence (iDEX)
- (g) Preference to Indigenous components
- (h) Common Indigenisation portal
- (i) Make II category

Emergence of DOI

156. The responsibility of indigenization per se for IA rested with DGQA till 2006 when it was transferred to the IA/ MGO’s Branch/ DG EME through creation of DOI with the defined role, “*To carry out indigenisation of imported stores including those manufactured by OFs/ DPSUs, where the OFs/ DPSUs state their inability to meet the requirement of the Army in required time frame, pertaining to Vehicles, Electrical/ Electronic, Armament and Engineer Equipment stores*”.

157. DOI is mandated to take on indigenization as per the under mentioned terms laid out for Selection of Items for Indigenisation/ development ((**Authority: Para 15.2.3 DPM 2009**):-

- (a) When OEM is closing down or has closed down the production line and spares are not available ex-import for equipment which has adequate residual life and population.
- (b) Items for which TOT has been taken.
- (c) Items including those which are low technology and the sample is available and which it would be economical to develop.
- (d) Spares which are fast moving and the requirement is recurring in nature.
- (e) Goods for which the import price is exorbitant.
- (f) Items short-listed from Manufacturers Recommended List of Spares (MRLS) and import list depending upon their criticality, technological processes involved and consumption rate.
- (g) Where an Indian firm offers to develop an item on 'No Cost No Commitment' (NCNC) basis.
- (h) In special cases, where it is considered in the interest of the State to indigenise or for any other strategic reason to be recorded, e.g. Secrecy devices.

158. While DoI and prior to that DGQA had mandates to undertake Indigenization, however, it is pertinent to realise the enormity of the task involved. Indigenisation will involve major, minor assemblies and components. In IA, majority of major weapon platforms and hi- tech equipment are of foreign origin for which ToT has been bought. As has been dwelt at length in chapter 2, the ToT is always truncated, as also, the responsibility of the supplier/ OEM to identify the competent manufactures in India is never pressed home and hence this very important aspect of indigenizing the parts for sustenance remains a grey area.

159. **Indigenisation of Spares: Task Complexity.** The enormity and complexity of the task involved can be gauged from the range of inventory and source of supply figures for equipment of IA as explained in the charts to follow.

Chart 4.1: Range of Spares Inventory in IA

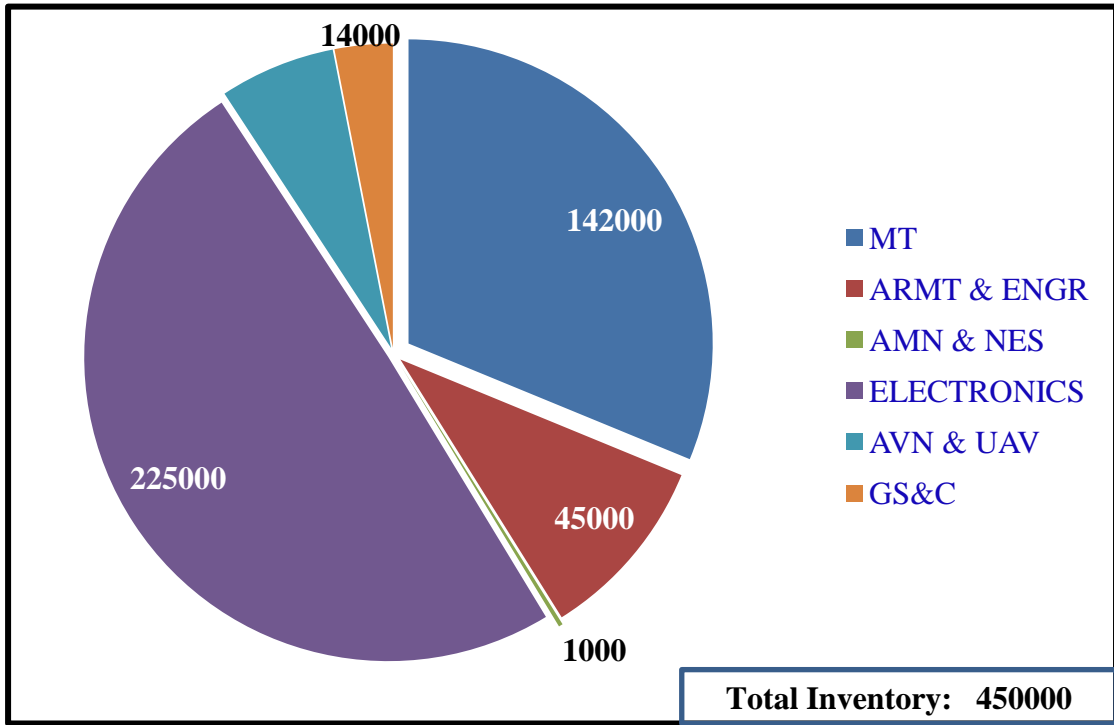
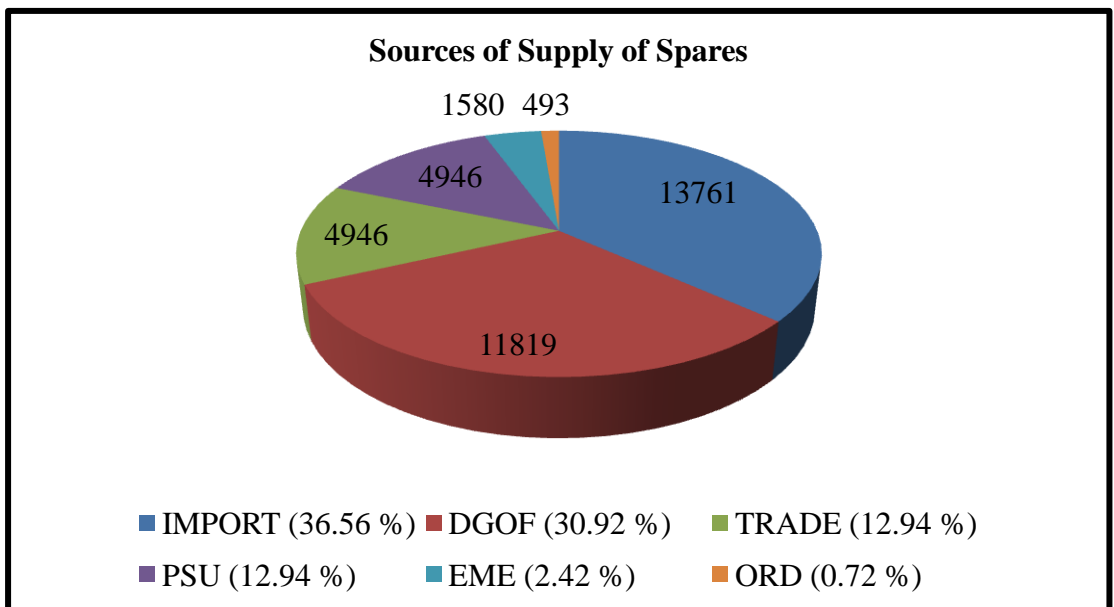


Chart 4.2: Sources of Supply of Spares Inventory in IA



Source: DOI, figures have been approximated

160. DoI in the past decade plus of its functioning has been able to indigenize barely 600 no items and another 3000 Nos have been identified for indigenisation. If these figures appear dismal compared to the total spares inventory, then the reasons are enlisted as under:-

- (a) Obsolescence Management: Need for Technology Upgrade / Redesign.
- (b) Long Gestation Period & Intricate Procurement Process.
- (c) Foreclosure of SO due to non delivery.
- (d) R&D – Timeline & Cost for complex Assembly / Sub-assembly.
- (e) Uneconomical volumes.
- (f) Research & Development.
- (g) Obsolescence.
- (h) Non adherence to Timelines.
- (i) Rigidity in Procurement Process.
- (j) Long Term Integrated Perspective Plan.

161. While indigenization of spares may seem a relatively small ticket project but it has the potential to provide businesses to MSMEs in a big way. Some of the suggestions for incentivizing indigenization in this field are as under:-

- (a) Interaction with R&D may be increased including funding of cooperative research programmes.
- (b) Leverage defence offsets.
- (c) Transfer of technology developed by DRDO to MSME.
- (d) Develop a structured database of MSME in defence industry.
- (e) OEMs to have skill training & TOT.
- (f) Access to design, testing & simulation facilities on pay per use model.
- (g) Information sharing on business opportunities.

162. **Generic Suggestions: Improving the Ecosystem.** During interactions all the stakeholders had to offer suggestions on improving the ecosystem towards Make in India and indigenization. These are consolidated as under:-

- (a) Making clusters of industries in each specialized field.
- (b) Indication of firm orders before industries are made to commit for realization of a particular type of product.
- (c) Standardization of quality agencies.
- (d) Creation of Indian Standards for quality purpose.
- (e) Reduction in gestation period of order fructification
- (f) Extra incentive for cluster of industries / industry for realization of high technology oriented futuristic systems.
- (g) Inclusion of product life support clauses for high tech systems right in the beginning alongwith the main contract.

COMMERCIAL INTERESTS AND PROFITABILITY

Exports and Ease of Doing Business

163. Karishma Maniar writes in Geopolitics, Show Daily (DEFEXPO 2020), 06 February 2020, *‘Despite the many initiatives that have been taken to ease transactions in the defence sector, it continues to lag in achieving its target of timely procurements and self-reliance. A trun around can be achieved only when the hurdles are removed’.*

164. In MoD, the DDP drives the policies and procedures on ease of business. GoI/ MoD have taken progressive steps to push ‘*Make in India*’. Some of the important ones are as follows:-

- (a) DGQA monopoly and responsibility to some extent has been done away with by introducing the scheme for third party inspection for Quality assurance.
- (b) Giving boost to exports, any entrepreneur with a defence oriented product can approach the MoD/ DRDO & DGQA testing facilities for the initial validation.
- (c) Repetitive submission of paperwork has been obviated for the export oriented company by introducing the Open General Export License for defence related goods.
- (d) DPSUs/ OFs can now approach an importing company directly and submit quotes thus bypassing the DDP. This is bound to save huge amount of resources and concerns.
- (e) DPSUs/ OFs can now progress their requirements with supply chain for upto 10 years.

165. Though these are reforms in a typical field of export oriented items but these are significant to overcome the red tapism associated with government processes in India. As reported in ANI on 01 Mar 2020, *“India beats Russia, Poland to bag USD 40 million defence deal in Europe. The deal is for supplying four SWATHI weapon locating radars developed by the DRDO and manufactured by BEL to Armenia in Europe”*. This can be construed as a major breakthrough in ‘*Make in India*’ in defence, which has been languishing. Though, a few of the private manufacturers also confirmed during interactions that the process of export licensing for defence oriented equipment has eased but the pace is slow. The instant case of SWATHI WLR is a one off case. As even the Raksha Mantri averred during the DEFEXPO that the next big

step in defence manufacturing has to be that India becomes a major exporter of defence oriented equipment.

166. Talking about exports of defence oriented equipment Desouza states, *‘Exporting defence equipment to friendly and stable countries is welcome. With India now a member of the Wassenaar Arrangement, such export will need to be done in a controlled manner under its export control guidelines. But, for export, Indian products will need to be globally competitive in performance, quality and prices and Indian firms capable of providing global standards of product support. This will be difficult using indigenous technology and the current sub-global level manufacturing facilities in India. Much easier to export foreign, well-proven and globally competitive products using foreign majority share owned JVs in India’.*

167. However, these initiatives still have not been able to transform the indigenization process. A lot more needs to be done in terms of increasing FDI, policy on offsets, issues about indigenous content in defence products, delayed payments, levying penalties and an improvement in the standard contract document.

168. **Respect for Profitability and Commercial Interests.** Almost all of the industry representatives have voiced their concern regarding the disconnect between the industry and the MoD/ Army authorities on the aspect of profitability. While it is understood that the industry/ entrepreneurs would venture into any business including defence manufacturing with the sole aim of making profits, this approach somehow does not get accepted by the buyer. In fact even the AM(LS) stated that the suggestions of the industry bodies are towards assuring business, financial and legal aspects of tendering and contracts and more clarity and lesser time in trials and acceptance.

169. On the commercial interest aspect and respect of profitability the undermentioned comments of Zachariah hold great merit:-

(a) “The MAKE II initiative by the Government is the right step in the direction for Make in India. The following incentive schemes have enabled better participation of private players:-

(i) Self Certification.

(ii) Third Party Inspection (TPI).

(iii) Green Channel Certification.

(iv) DGQA Certification for Vendor other than L1 vendors for exporting their products which have been successfully validated during trials.

(b) The firms undertake huge capital investments, the trial period runs into months/ years, but ultimately the firms are not assured of any supply orders (firm order commitment is not there).

(c) Even if a firm gets any Supply Order for some quantity, future commitments from Defence Services are not guaranteed, hence their sustenance and future production is a question mark.

(d) Delay in payment to the Manufacturer after delivery of the Stores is again a grey area.

(e) The L1 tender factor in DPP policy will be only a detrimental factor in this regard”.

170. **The L1 Syndrome.** While DPP documents bring out policies, procedures in detail but the issue related to L1 tender does not assist in ‘*Make in India*’ initiative towards Army requirement. The following has been suggested by Zachariah:-

(a) **Gujarat Model.** The State Government extends all possible help to a firm being established, at their doorsteps. They ensure that various agencies involved in the process, interact proactively and all their problems/ issues are resolved at the earliest. Similarly, all the Central Government agencies/ committees should have a proactive approach.

(b) **L1 Tendering to be Done Away.** Like in ISRO/ Toyota, say out of 10 items orders of 2 – 3 items are given to 2/ 3 specific firms by a committee, after price negotiation and clearance of quality related aspects. Thus the associated Company/ Manufacturer gets a firm commitment and ensures delivery of quality stores to the order placing authority which is not possible in open tenders with L1 criteria.

171. The Kalyani Group representative opines, *‘Think commercial before seeking indigenization specially in terms of Volumes, procedures and change the outlook that cost of item should be less’*.

172. **Effectiveness of ‘Make in India’ in IA.** Though, the reform measures discussed in the foregoing including streamlining of the licensing process and liberalized FDI policy has given a strong indication of the GoI seriousness in articulation of export promotion measures. But at the same time the differing principles – one of competition for the private sector and the other of nomination for the PSUs – seems hypocritical and does not inspire the private sector’s confidence in the industry. Additionally, the way the government intends to operationalise the revamped “Make” procedure also does not inspire much confidence. The disappointment stems mainly from the emphasis on low-value- and import-substitution-oriented projects identified for execution under revised procedures. Of the 13 potential “Make” projects for, there is hardly any project that merits the hype

and dignity of the revamped procedure. It suffices to mention that the list includes projects such as gun barrel, auxiliary power unit for tank, aircraft refuelling pump, diesel engine for boats and rotor blades, to name a few. (**Behera, 2018**).

173. Major foreign companies do not seem to be enthused with the liberalised FDI policy. They have raised complaints stating that the policy gives scant respect to the risk factors associated with investment inflows. They have pointed out that unlike in other sectors that are abound in buyers, when it comes to the defence industry, the investments cater primarily to one customer (i.e., the MoD) whose purchase assurance is a minimum prerequisite for any commercial success. Since the FDI policy is not linked to any procurement project, the foreign investors have no assurance that their investment will meet commercial success. This has been the primary reason why the new policy has not attracted any worthwhile investment. The private sector is also frustrated with some of the government's actions. It is increasingly seeing a disjuncture between the government's policy talk and actual action effected on the ground. Its major complaints are about the slow decision-making process in awarding contracts and the government's old mind-set of giving contracts to the PSUs through nominations. (**Behera, 2018**).

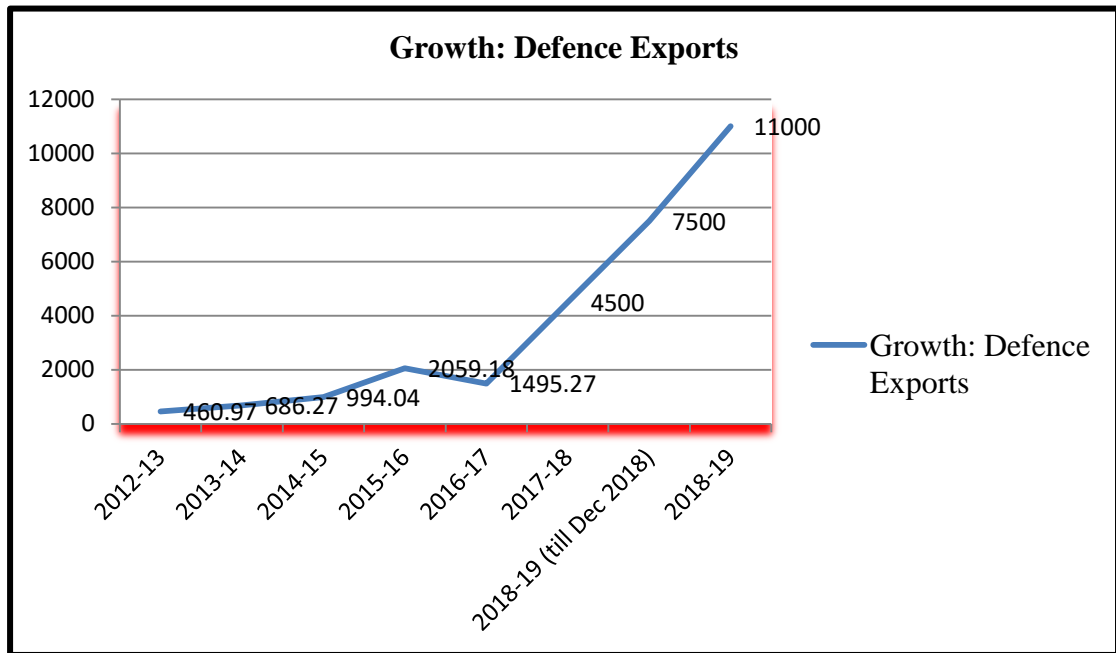
174. But at the same time the industry has welcomed the liberalization of the policy directives on exports of defence oriented equipment. Some of the comments are as under:

- (a) The BEL representative has opined, 'Yes, export is not only necessary for BEL but also for India as a whole for our Brand building. BEL is exporting WLR Radar which has been supplied to IA. Our policy is to invest every year almost 9-10 % of our revenue in R&D notwithstanding whether Export target has been achieved or not.

- (b) Adani Defence representative commented, 'We have exports, without that industry can't survive '.
- (c) Kalyani group representative was appreciative of the GoI policies, in stating, 'Yes we are exporting defence systems and products as GoI policy are truly enablers'.
- (d) L&T representatives were equally appreciative, 'We are already exporting defence equipment to several countries. GOI policies are in place to encourage and facilitate defence exports'.
- (e) Zen Technologies representative had a cautious approach, 'We are exporting our products to foreign companies. Government has come up with many policies that are Export Friendly. But execution of their own policies by Governmental Agencies is very sluggish and thus negates the very purpose of these policies. Also Governmental Agencies in Indian and abroad (Embassies including DAs) should go out of their way to help Indian Companies who n are exporting. We witness all the such involvement of foreign governmental Agencies but same is not the case with us, though it is improving'.
- (f) Thales representative was a little skeptical in stating, 'Foreign customer will buy only if IA has purchased it and endorses it. Hence, as step one, IA must purchase our product'.
- (g) As an entrepreneur and an expert, Anurag had a very different take, 'Yes, we plan to export our product. Current policies are biased towards inbound products but local manufacturing is encouraged. Suggestion are, GoI should adopt local initiatives and can sell them as Government to Government deals with other nations , thus win win situation for all.

175. And this is further corroborated by the increase in defence exports as shown in the chart below.

Chart 4.3: Growth in Defence Exports



Source: MoD/ DDP, Annual Reports 2016-17 upto FY; and The Economics Times, 18 January 2019 for FY 2017-18 and FY 2018-19

176. To add to the above, jagranjosh.com website shows that India has joined the list of global arms exporters for the first time as per SIPRI. SIPRI database suggest that India's imports of arms have fallen by 32% since 2015 and exports of arms have increased thus indicating that the Make in India programme is progressing well. India's biggest arms customers are Myanmar (46%), Srilanka (25%) and Mauritius (14%). **(Gorky Bakshi, jagranJosh, 12 Mar 2020).**

177. Even General Kulkarni in his interview to Major Arya, confirmed that the exports from OFB have reached a staggering Rs 150 Crore in the current FY, from almost nothing, fifteen years back.

TO BE OR NOT TO BE

178. During the course of the instant research, such varying opinions, views and factual data have been received that all these simply vindicate the absolute quagmire that the IA acquisition procedure and '*Make in India*' for IA is made out to be.

179. Some aspects which have categorically emerged are as under:-

(a) Current DPP is an enabler and that the industry needs to interpret it to its advantage. There are stringent conditions in the DPP which need to continue to safeguard the security of the nation. However, theoretically DPP is an enable towards the stated goal of self reliance through Make in India. And that the industry bodies like CII, FICCI, ASSOCHAM should project for realistic amendments in the DPP 2020 which is on the anvil. All the policy makers in the MoD/ Army HQ are willing to accept the suggestions with a positive bent of mind.

(b) GoI/ MoD have categorised a pecking order which favours the domestic industry. And the GoI is more than willing to extend incentives to the domestic industry. However, the realisation has set in that the reforms to the DPP in the right earnest can happen through an incremental approach and not through a transformational approach owing to several systemic and ecosystem based shortcomings. '*Make in India*' for Indian Army is still at least a decade away in the right earnest. In this interim period enabling changes have to be instituted by all stake holders.

(c) The MoD elements and industry players, all agree that the exports can happen not only through liberal and enabling policies which in any case are now becoming favourable but the most important aspect is that indigenisation

of world class level has to happen. And thereupon the indigenised product has to be accepted and exploited in domestic environments by national consumers (IA) before it can find buyers and acceptance for exports by prospective importers.

(d) The implementers of the DPP have to be domain experts who should not only understand the processes through On the Job Training (OJT) but also should be formally trained to undertake the tasks assigned with indigenization, '*Make in India*' for IA.

(e) There is scope to make the processes further simplified through a single window methodology where in the organization dedicated to the Modernization, indigenization processes of IA and weapons platform requirements should be independent of the service HQs so that it has more flexibility to interact with stake holders including industry representatives without fearing the wrath of regulators.

CHAPTER V- RECOMMENDATIONS, AREAS OF FUTURE RESEARCH

“No Country is truly independent unless it is self-reliant in the matter of Armaments”

..... Pandit Jawaharlal Nehru



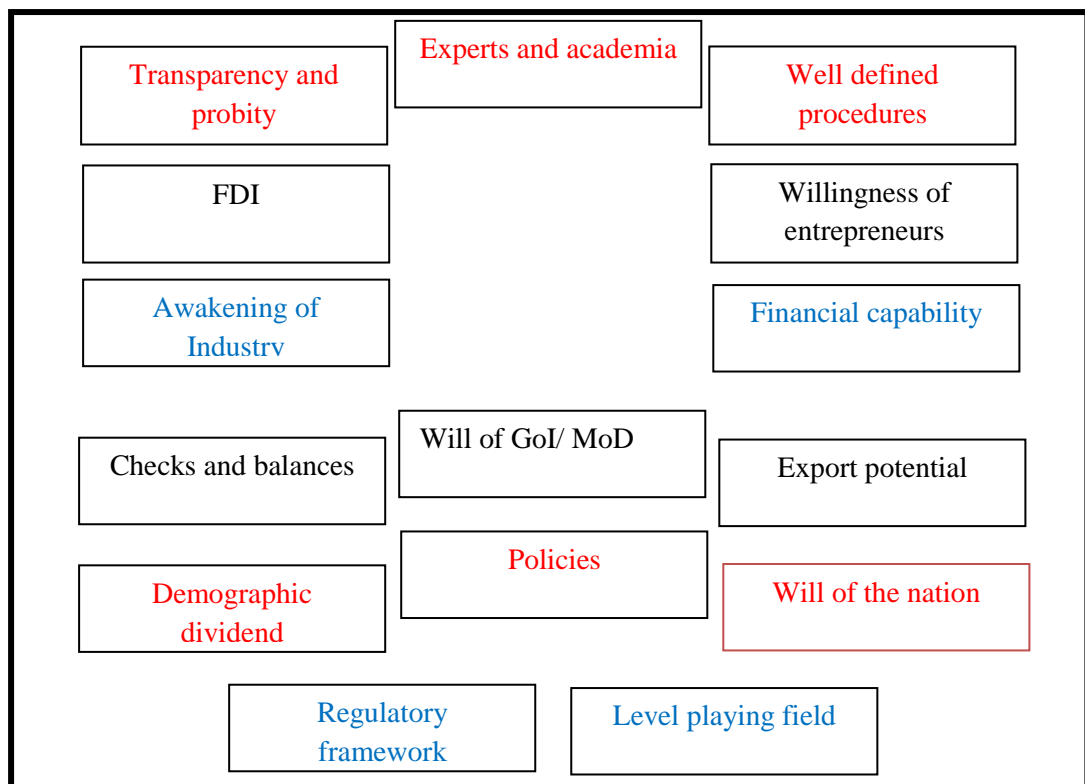
RECOMMENDATIONS

Experience Gained

180. Owing to the experience and knowledge the researcher had attained while working on certain appointments in the course of performance of duty over the past thirty years, the researcher was of the thought process that ‘*Make in India*’ for IA was a topic well within reach and understanding. However, having interacted with a host of stakeholders, during the course of the research, it has been a revelation, otherwise.

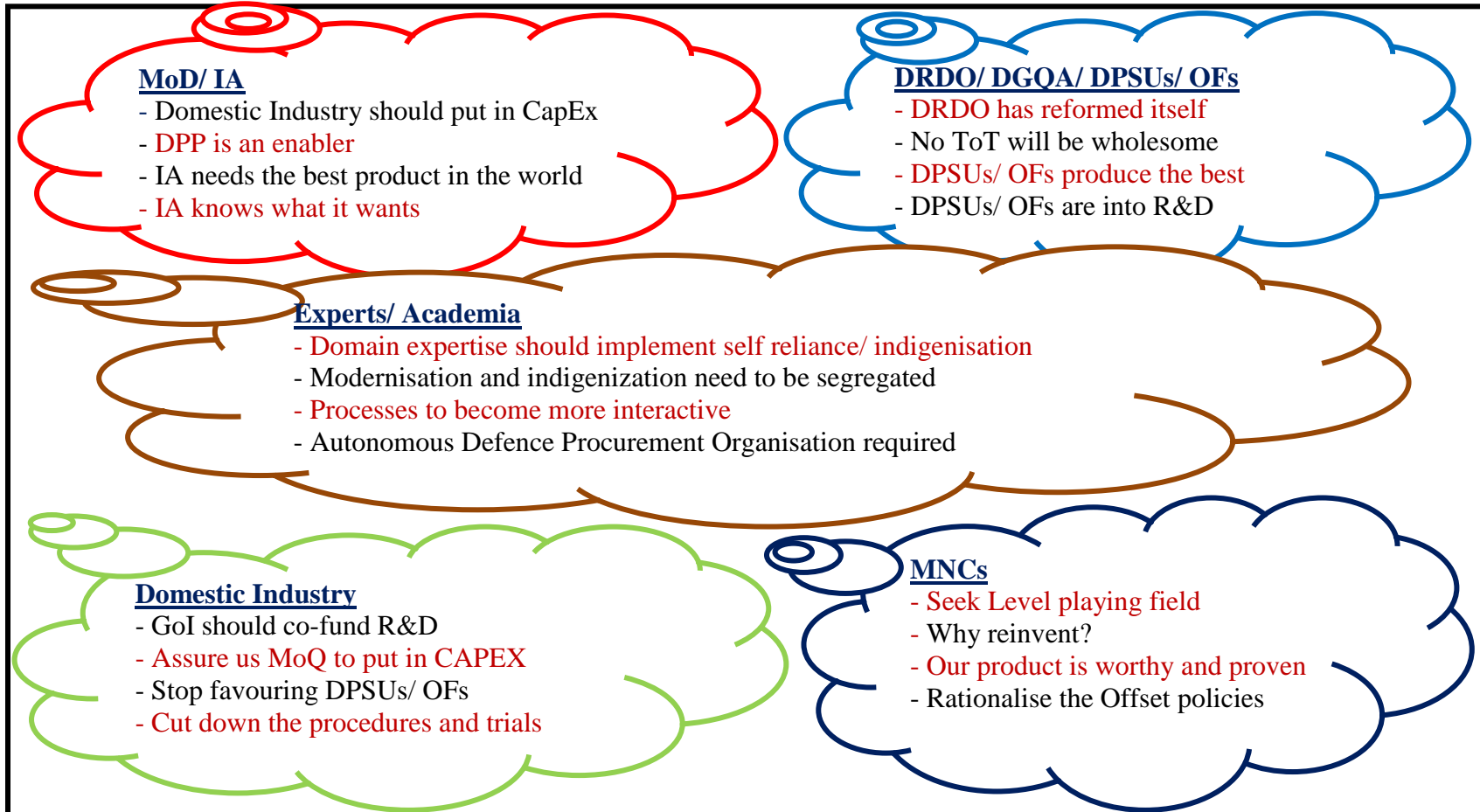
181. While, apparently all factors required for ‘*Make in India*’ for self reliance through indigenization for IA seem to be in place, the results are not commensurate. Is it too early still to come to a conclusion or is there a fundamental misgiving? The gist of the research is covered in the following two figures.

Figure 5.1: Factors for ‘Make in India’ for IA



Source: Inputs of Instant Research

Figure 5.2: Gist of Convictions/ Recommendations: Stakeholders of 'Make in India' for IA



Source: Inputs of Instant Research

182. The recommendations are grouped as under:-

(a) **Defence Acquisition Organisation (DAO)**. First and foremost the complex structure dealing with acquisition in IA, with several verticals independent of each other, though all under MoD, need to be streamlined into an autonomous entity which can be called DAO. A depiction of the organization structure is as given out at Figure 5.3. The organization should have a dedicated interactive window with the industry. Some of the important tasks for DAO could be summed up as follows:-

(i) Ensure self reliance through '*Make in India*', primarily, indigenization.

(ii) Undertake periodic meetings with the industry to explain the technology and product being sought.

(iii) Ensure that views and requirements of Industry are corroborated and endorsed in the DPP.

(iv) With or without a DAO the Trust Deficit between various stakeholders needs to be mitigated and overcome, through the following measures:-

(aa) Organised training for all associated with Acquisition.

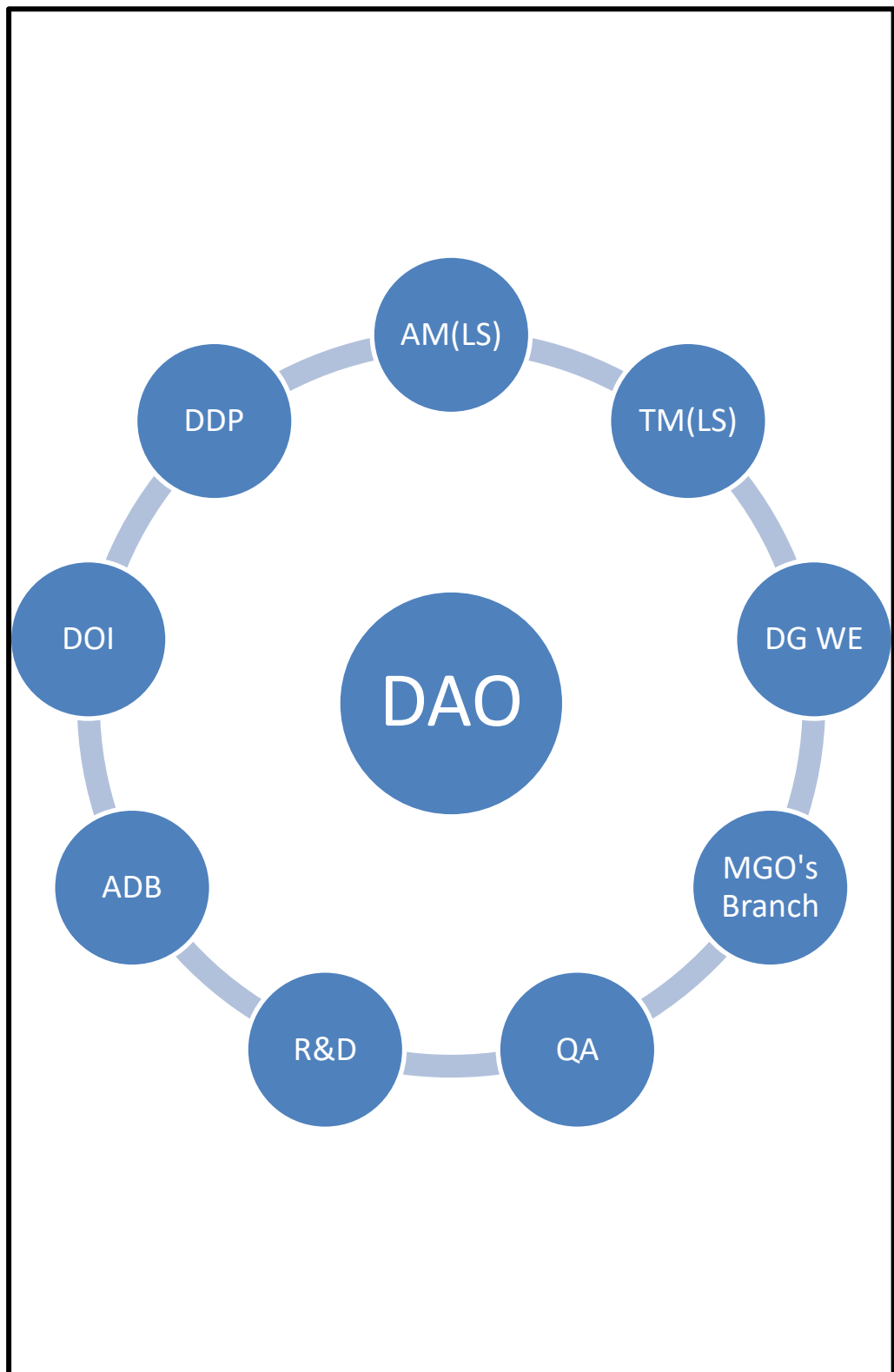
(ab) Exports of defence oriented products to be opened up.

(ac) Implementation of '*Ease of Doing Business*' to be monitored.

(ad) Accountability of all concerned in Procurement and '*Make in India*'.

(ae) IA to accept the Mark I version of '*Made in India by the Indian*' and then go hammer and tong for improved versions.

Figure 5.3: A Typical Defence Acquisition Organisation Structure



Source: Inputs of Instant Research

(b) **Financial Aspects.**

(i) Indian is a growing economy with a clout and hence should not be satisfied with Buyer – Seller or Patron – Client relationships. India needs to exploit the advantage of buyer`s clout.

(ii) Additional rational budgetary provisions for Capital Acquisitions as per reasonable projections in tune with the road map..

(iii) ‘Procurement and ‘*Make in India*’ should be segregated. ‘*Make in India*’ to be addressed in the following phases:-

(aa) Acquisition in the immediate future.

(ab) Graduated ‘*Make in India*’ as per road map. Long term projects to be phased over a period of time

(c) **Spares Inventory.** India is expected to spend approximately USD 100 billion over 12th and 13th Defence five year plans on military modernization. Therefore, there is urgent need to take a call and carve sound maintenance and sustenance philosophy by joining hands with Industries and academia to ***Develop, Design and Manufacture*** the necessary wherewithal, *Indigenously*, to reduce dependence on foreign vendors and maintain high level of serviceability of the state of the art equipment. Suggestions to improve indigenization of spares are as follows:-

(i) Indigenisation to target newly inducted equipment.

(ii) Indigenisation to focus on major assembly/ sub-assembly.

(iii) Indigenisation to be based on import list.

(iv) Cater to Life Time Support.

(v) Seek Maintenance ToT (MToT).

(vi) Direct offsets for manufacturing products to be encouraged.

(d) **Policies & Procedures.** In the current perspective, decisions on policies and procedures, as under, need to be undertaken forthwith:-

(i) Protect the interests of the domestic industry first. And hence, no level playing field vis-a-vis foreign firms. Consequently, impetus to *Indigenous Design & Development* to be reinforced.

(ii) Within the domestic industry, private entrepreneurs, DPSUs and OFs to be pitched at Level Playing Field through competitive bidding. System of nomination of DPSUs/ OFs for procurement to be gradually ceased.

(iii) Licensing system needs to be given a relook and to be done away with for manufacturing of defence equipment by private companies except for very critical products.

(iv) Insistence on Jointness- Joint development, Joint trials & testing, Joint production, Joint marketing and Joint product improvement, through an institutional mechanism.

(v) DPP be amended and procurement norms be changed with waivers from the CAG/ CVC guidelines on L1 concept.

(e) **Research & Development.**

(i) Design Agency status to be conferred to DPSUs / OFBs.

(ii) Accountability of DRDO to be ensured through independent evaluation.

(iii) Induction of Private industry into R&D with incentives like tax rebates.

(iv) Policy of `No cost No Commitment` to be replaced by `Risk sharing gain sharing`.

AREAS OF FUTURE RESEARCH

183. The more the research was dwelt into the instant topic, the more it was realized that this was going to be never ending. While solutions available are seemingly simple but the stake holders are so many and each one is looking at it from a very personal angle. The '*Make in India*' to each stake holder, holds a very different meaning.

184. The trust deficit between the stakeholders is such that none is prepared to have an open and candid interaction with the other. While the shortcomings are known to each other but rather than convert the situation into a Win-Win, everyone is happy playing a Lose-Lose game, so that the empathy is persistent for everyone unabated and accountability is amiss at all places and all levels.

185. While it has been attempted to look at certain basic questions in the instant research, it would be more pertinent, if concrete suggestions on the DAO and road map for '*Make in India*' for IA could be re-identified and spelt out.

186. This would then enable to clearly demarcate between the procurements to be undertaken in the immediate future to attend the immediate requirements of IA which is paramount for national security but at the same time identify the requirements to put through intense R&D regime for futuristic needs towards self reliance through indigenization.

Appendix 'A'

(Para 31, Chapter I, refers)

INTERACTIONS AND RESPONSES TO QUESTIONNAIRE

1. Various stake holders in 'Make in India' for Defence/ Army were contacted and interacted with. Their mode of interaction and responses to questionnaires are tabulated, as under:-

Ser No	Stake Holder (Category)	Stake Holder Representative (Sub Category)	Mode of Interaction		Annexure
			Interview/ Meeting	Questionnaire	
(a)	<u>MoD</u>				
		AM(LS)	-	Yes	I
		TM(LS)	Yes	-	-
		DRDO	Yes	-	II
		DGQA	-	Yes	III
		Army HQ/ ADG ADB	Yes	-	-
		Army HQ/ WE Directorate	Yes	-	-
		Army HQ/ MGO's Branch/ EME Directorate/ DOI	Yes	-	-
		OFB	Yes	Yes	IV
	DPSUs/ BEL	-	Yes	V	
(b)	<u>Industry, Indian</u>				
		M/s Adani Defence	Yes	Yes	VI

Ser No	Stake Holder (Category)	Stake Holder Representative (Sub Category)	Mode of Interaction		Annexure
			Interview / Meeting	Questionnaire	
		M/s Kalyani Group	Yes	Yes	-
		M/s BRAHMOS	Yes	Yes	VII
		M/s L&T	Yes	Yes	-
		M/s Punj Lloyd	Yes	-	-
		M/s TATA	-	Yes	-
		M/s Zen Technologies	Yes	Yes	-
(c)	<u>Industry, Multinationals</u>				
		M/s BAE Systems	Yes	-	-
		M/s DataPath	Yes	Yes	-
		M/s Honeywell	Yes	-	-
		M/s MTU/ Rolls Royce	Yes	Yes	-
		M/s Thales	Yes	Yes	-
(c)	<u>Academicians/ Experts</u>				
		Col Kevin A Desouza, ex Fellow IDSA	Yes	Yes	VIII
		Dr Laxman Kumar Behera, Research Fellow, IDSA	Yes	-	IX
		Mr Amit Cowshish, (IDAS) (retd), IDSA	Yes	-	-

Ser No	Stake Holder (Category)	Stake Holder Representative (Sub Category)	Mode of Interaction		Annexure
			Interview / Meeting	Questionnaire	
		Lt Col Anurag Shukla, SM (retd), Entrepreneur/ Startup	Yes	Yes	-
		Mr Uday Kotak, President Designate, CII	Yes	-	-
		Col Vivek Uberoy (retd), CEO with ADTL	-	Yes	-
		Mr Bharat Singh, IOFS (retd)	Yes	-	-
		Mr Jai Yadav, IOFS	-	Yes	-

Note: All agencies / individuals, to whom the questionnaires were floated, as above, have not responded. However, between response to questionnaire / meeting, at least one mode of communication has been undertaken with each identified responder.

Annexure I

(Para 1(a), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from JS & AM(LS)****1. Concerning Technology.**

- (a) Do you feel that the DRDO developed technologies can compete with the world class ones? If yes, can you name a few? If not, what are the reasons?
- (b) Do you feel the desired levels of seriousness in the Indian Defence Industry on the aspect of developing niche technologies for Indian army requirements?
- (c) How can the GoI assist the industry in developing niche technologies required for defence manufacturing?
- (d) In your opinion, how long will it take for the indigenous industry to develop niche technologies for defence manufacturing?
- (e) Has the model of ToT for defence requirements sufficed the needs of self reliance?
- (f) Do we seek technology transfer including designs, i.e IPR through foreign firms in ToT based contractual obligations? If not, why?

2. Concerning Indigenisation Process.

- (a) Can you define Make in India in a layman's language?
- (b) Does the current DPP actually promote 'Make in India'? If yes, can you name a few successful projects? If not, what are the suggestions in broad terms?
- (c) Why have MAKE 1, FICV, TCS and BMS projects not succeeded?

(d) With the current spate of indigenization through ToT/ integration routes, is the desired state of self reliance being achieved?

(e) Is there enough backing/ assurance of the GoI/ MoD to the industry towards indegenisation? If not, what are the suggestions to improve the same?

3. **Concerning the OFB/ DPSUs/ DRDO.**

(a) Has DRDO succeeded in its assigned role?

(b) Do the OFB/ DPSUs actually manufacture or only integrate?
Comment.

4. **Concerning Government Processes.**

(a) Does the current format of TPCR, enable the industry to envision/ understand the long term Indian Army requirements in qualitative (technology) and quantitative terms?

(b) Has any of the industry bodies, viz. CII, SIDM, ASSOCAM or FICCI projected serious bottlenecks, in attempts towards indigenization of products for Indian Army? If Yes, are the suggestions being incorporated in the new DPP 2020?

(c) In your opinion will the industry be able to fund its R&D through exports of defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?

(d) Is it correct to pitch Indian defence industry with the foreign defence industry at a level playing field in light of promoting Make in India for Indian Army?

5. Any additional suggestions, on the topic.

Annexure II

(Para 1(a), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from DRDO Representatives****1. Concerning Technology.**

- (a) Are you aware of the technologies required for modernization of IA?
- (b) If yes, or otherwise, are you undertaking the R&D on your own or in collaboration or through ToT?
- (c) Are you working in conjunction with IPA? If yes, which all and for what projects?
- (d) How futuristically are you orienting yourself?

2. Concerning Indigenisation Process.

- (a) Which are the technologies that DRDO is confident of indigenising?
- (b) Bottlenecks identified, if any.
- (c) Facets of current Government policies including defence procurement procedure (DPP) on promoting 'Make in India'.
- (d) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?
- (e) Has Make in India initiative been successful vis a vis Indian Army?
- (f) Will 'Make for India' be more relevant vis a vis 'Make in India' as far as army weapons and equipment requirements are concerned?

3. Concerning the Financial Aspects.

- (a) What has been the DRDO budget for R&D for IA oriented projects in the past 6 years? Is it sufficient?

(b) Has any substantial R&D been achieved since the initiation of Make in India in 2014?

(c) In your opinion will the industry be able to fund its R&D through exports of defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?

Annexure III

(Para 1(a), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from DGQA/ SQAE(Systems)****1. Concerning Technology.**

- (a) Is DGQA aware of the technologies required for modernization of IA?
- (b) What is the DGQA experience in respect of technologies for army weapons and equipment in India?
- (c) During the course of quality assurance checks, what is your experience of the technical capabilities of the indigenous manufacturers vis a vis equipment required for Indian Army?

2. Concerning Indigenisation Process.

- (a) Comment on the facets of current Government policies including defence procurement procedure (DPP) on promoting 'Make in India'.
- (b) Has Make in India initiative been successful vis a vis Indian Army?

3. Concerning the Defence Manufacturing Industry.

- (a) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?
- (b) Are the Indigenous manufacturers dwelling in R&D for ensuring self reliance in critical Indian Army needs? If yes, to what extent? If not, why?
- (c) What are your suggestions towards facilitating the indigenisation of Indian Army requirements?

- (d) What in your opinion is the most appropriate strategy for equipment procurements for Indian Army?... Procurement ex Import, Manufacture in India through TOT, IDDM.... And Why?
- (e) What is your opinion about opening up the Defence sector for exports? Will a liberal policy in this regard, assist in Make in India?
- (f) By when in your opinion will the indigenous Defence industry be prepared to undertake IDDM in the right earnest?
- (g) What are the bottlenecks in the progress towards self reliance for critical needs of Indian Army?
- (h) Are you associated with Project BRAHMOS? Elucidate.
- (i) In your opinion do the foreign manufacturers provide TOT, as per the contract, for enabling manufacturing in India? If yes, can you provide inputs on cases with established ToT? If not, why is the ToT not provided as per the requirement of Indian Army? Suggest a way out?

Annexure IV

(Para 1(a), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from OFB/ OF****1. Concerning Technology.**

- (a) Are you aware of the technologies required for modernization of IA?
- (b) If yes, or otherwise, are you undertaking the R&D on your own or in collaboration or through ToT?
- (c) Are you working in conjunction with DRDO or any other R&D organisation?

2. Concerning Government Processes towards Indigenisation.

- (a) Do you confront bottlenecks, if any, in your attempts towards indigenization of products for Indian Army?
- (b) Has Make in India initiative been successful vis a vis Indian Army?
What is your experience?
- (c) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?
- (d) Are you working on any project for GoI/ MoD on NCNC or PPP model basis towards R&D/ productionisationin weapons and equipment technology?
- (e) Do you have any plans for exporting defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?

3. **Concerning Orders from GoI/ MoD for Indian Army.**

(a) Does OFB have products to compete in open competition against international firms?

(b) How many orders has the OFB received from Indian Army on a FY basis since 2014? Give the amount of each order and the equipment supplied

Annexure V

(Para 1(a), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from BEL, Ghaziabad****1. Concerning Technology.**

- (a) Are you aware of the technologies required for modernization of IA?
- (b) If yes, or otherwise, are you undertaking the R&D on your own or in collaboration or through ToT?
- (c) Are you working in conjunction with DRDO or any other R&D agency?
- (d) Have any technologies/ R&D been transferred from DRDO to BEL since 2014? If yes, year wise breakdown be provided?

2. Concerning Indigenisation Process.

- (a) Bottlenecks identified, if any.
- (b) Facets of current Government policies including defence procurement procedure (DPP) on promoting 'Make in India'.
- (c) What all equipment have been supplied to Indian Army since 2014? What was the indigenized content in each of these? Year wise breakdown be provided?

3. Concerning the Government Processes.

- (a) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?

- (b) Are you working on any project for GoI/ MoD on NCNC or PPP model basis towards R&D/ productionisation in weapons and equipment technology?
- (c) What are suggestions towards facilitating the indigenisation of Indian Army requirements?
- (d) Will 'Make for India' be more relevant vis a vis 'Make in India' as far as army weapons and equipment requirements are concerned?
- (e) Do you have any plans for exporting defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?
- (f) Is the export of defence oriented equipment necessary for BEL?
- (g) Has BEL resorted to exports of any of their army related products? If yes, are there any plans of utilizing the revenues towards R&D?

Annexure VI

(Para 1(b), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from Defence Manufacturing Industry****2. Concerning Technology.**

- (a) Are you aware of the technologies required for modernization of IA?
- (b) If yes, or otherwise, are you undertaking the R&D on your own or in collaboration or through ToT?
- (c) Are you working in conjunction with DRDO or any defence PSU?

3. Concerning Indigenisation Process.

- (a) Bottlenecks identified, if any.
- (b) Facets of current Government policies including defence procurement procedure (DPP) on promoting 'Make in India'.
- (c) Has Make in India initiative been successful vis a vis Indian Army?

4. Concerning the Government Processes.

- (a) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?
- (b) Are you working on any project for GoI/ MoD on NCNC or PPP model basis towards R&D/ productionisation in weapons and equipment technology?
- (c) What are suggestions towards facilitating the indigenisation of Indian Army requirements?
- (d) Will 'Make for India' be more relevant vis a vis 'Make in India' as far as army weapons and equipment requirements are concerned?

(e) Do you have any plans for exporting defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?

Annexure VII

(Para 1(b), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from M/s BRAHMOS****1. Concerning Technology.**

- (a) Are you aware of the additional technologies required for modernization of the missile programme of IA?
- (b) Is there R&D involved in project BRAHMOS? If yes, to what extent?
- (c) What is the level of indigenous component in project BRAHMOS?
- (d) Are there any plans to indigenise non indigenous components/ MUAs of Brahmos in future? If yes, what are the planned timelines?
- (e) Has the indigenization in Project Brahmos improved since the launch of Make in India in Sep 2014? If yes, the same be elaborated.

2. Concerning Government Processes towards Indigenisation.

- (a) Do you confront bottlenecks, if any, in your attempts towards indigenization of your product(s) for Indian Army?
- (b) Has Make in India initiative been successful vis a vis Indian Army? What is your experience?
- (c) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?
- (d) Are you working on any other project for GoI/ MoD on NCNC or PPP model basis towards R&D/ productionisation in weapons and equipment technology?

(e) Do you have any plans for exporting your product(s)? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?

3. **Concerning Orders from GoI/ MoD for Indian Army.**

(a) Is project BRAHMOS financially sustainable? Please elaborate.

(b) What are the long term plans for Project Brahmos, vis a vis Make in India?

4. Any additional suggestions, on the topic.

Annexure VIII

(Para 1(d), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from Colonel Kevin A Desouza****1. Concerning Technology.**

- (a) Are you aware of the technologies required for modernization of IA?
- (b) In your opinion, what is a better option, ToT (ex foreign) or indigenous R&D towards modernization of Indian Army?
- (c) Has DRDO been able to provide the niche technologies for Indian Army requirements? If not, what in your opinion are the drawbacks and bottlenecks?
- (d) Is Indian industry on the right track for technology development required for modernization of Indian Army?

.Concerning Indigenisation Process.

- (e) Has Make in India in the Defence sector taken off? If not, what are the bottlenecks? Please elaborate.
- (f) Comment on facets of current Government policies including defence procurement procedure (DPP) on promoting 'Make in India'.
- (g) Is the defence industry in India Gung ho about Make in India initiative vis a vis Indian Army? Why have the indigenous big ticket projects not seen the light of the day?

2. Concerning the Government Processes.

- (a) In your opinion can the PPP model towards R&D/ productionisation in weapons and equipment technology likely to succeed?

- (b) What are suggestions towards facilitating the indigenisation of Indian Army requirements?
 - (c) Will 'Make for India' be more relevant vis a vis 'Make in India' as far as army weapons and equipment requirements are concerned?
 - (d) What are your views on exporting defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?.
3. Any other suggestions on the topic.

Annexure IX

(Para 1(d), Appendix 'A', refers)

QUESTIONNAIRE**MAKE IN INDIA: RELEVANCE AND EFFECTIVENESS IN IA****Response Sought from Dr Laxman Kumar Behera, IDSA****1. Concerning Technology.**

- (a) Are you aware of the technologies required for modernization of IA?
- (b) In your opinion, what is a better option, ToT (ex foreign) or indigenous R&D towards modernization of Indian Army?
- (c) Has DRDO been able to provide the niche technologies for Indian Army requirements? If not, what in your opinion are the drawbacks and bottlenecks?

2. Concerning Indigenisation Process.

- (a) Has Make in India in the Defence sector taken off? If not, what are the bottlenecks? Please elaborate.
- (b) Comment on facets of current Government policies including defence procurement procedure (DPP) on promoting 'Make in India'.
- (c) Is the defence industry in India Gung ho about Make in India initiative vis a vis Indian Army? Why have the indigenous big ticket projects not seen the light of the day?

3. Concerning the Government Processes.

- (a) Does the current DPP assist in Make in India initiative towards army requirements? If not, what are your suggestions?
- (b) in your opinion can the PPP model towards R&D/ productionisation in weapons and equipment technology likely to succeed?

- (c) What are suggestions towards facilitating the indigenisation of Indian Army requirements?
 - (d) Will 'Make for India' be more relevant vis a vis 'Make in India' as far as army weapons and equipment requirements are concerned?
 - (e) What are your views on exporting defence oriented equipment? Do the current GoI policies facilitate such an initiative? If not, what are your suggestions?
4. Any other suggestions on the topic.

Appendix 'B'

(Para 147(d)(iv), Chapter IV, refers)

RECOMMENDATIONS FOR AMENDMENTS IN DPP 2016

(ZEN TECHNOLOGIES LIMITED, HYDERABAD)

Amendments in Chapter 1**1. Para 6: Definition -Buy (Indian-IDDM).**

(a) Buy Indian IDDM has been included in DPP 2016 to provide incentives to Indian Companies to invest in R&D and develop niche technologies and indigenous products. Therefore, foreign products should not be allowed to participate under this category. Definition given at Para 6(b) permits participation of foreign companies and should thus be removed.

2. Para 6.1: Process of Verification of Indigenous Content (IC).

(a) It is felt that Guidelines for verification of IC in Buy Indian IDDM, Buy Indian and Buy and Make (Indian), during the evaluation process, should be formulated and included as Appendix to this Chapter. It will help both, Buyer as well as seller and avoid delays on account of non availability of SOP.

3. Para 8: Buy and Make (Indian).

(a) It is felt that this Category has lost relevance with the introduction of MAKE II Category in DPP 2016. This may be considered to be taken off.

4. Para 15: Upgrades.

(a) **Categorisation of Upgrades.** For the purpose of up-gradation of in service weapon system/equipment, there should be an option of 'Upgrade by OEM' as sixth categorisation because more often than not it is OEM who

would be able to effectively upgrade system/equipment which has been developed by him.

5. **Para 18-19: Sharing Future Needs of Armed Forces with Industry.**

(a) TPCR has not been found to be a useful document in giving a look at future needs of Armed Forces. What needs to be conveyed to the Industry is details of products listed in 5 years Services Capital Acquisition Plan (SCAP) suitably modified keeping security aspect in mind.

(b) Para 19 should be amended to incorporate regular & structured interactions by HQ IDS/SHQ with industry, to share details of Buy Category schemes, Draft GSQRs, indicative time frames, envisaged quantities in SCAP like it is presently done for MAKE cases.

Amendments in Chapter II

6. **Para 7: Formulation of RFI.**

(a) Prior to DPP 2016, RFI was formulated and issued by User Directorate. DPP 2016 made it quite difficult by bringing in requirement of consultation with DRDO, DDP and HQ IDS. It should be reverted back to earlier procedure of DPP 2013 and before.

7. **Para 11: Preparation of SQRs.**

(a) Formulation of SQR needs to be done very deliberately and carefully as faulty and unrealistic SQRs have been reason for fall of many procurement cases. Interaction with interested vendors in a collegiate manner prior to formalisation of SQRs will go a long way to make a realistic, doable SQR. Para may suitably be amended.

8. **Para 13: Requirement of Approved SQR Prior to Seeking AON.**

(a) Requirement of an approved SQR for seeking AON & Categorisation should be done away with as these are two different activities and are independent of each other. This will save lot of time as these two activities can now be undertaken concurrently.

9. **Para 26: Procurement from DG S&D.**

(a) This organisation has since been disbanded, para may be deleted or suitably amended to incorporate GEMS, if required.

10. **Para 27: Procurement of Products Developed by Army Base Wksp, Naval D-----.**

(a) This_Para_is ambiguous. User tries to manipulate the Para to procure item from a chosen Vendor. Insertion of a word **THEIR** in the para (“Products developed by Army Base Workshops, Naval Dockyards & Air Force Repair Depots for ‘**THEIR** in house requirements’ can be procured -----with approval from SCAPCHC”) will remove ambiguity and chances of manipulation.

11. **Paras 55 to 57: Technical Evaluation Committee (TEC).**

(a) It is felt that practice of conducting TEC may be dispensed with. Statistical data on TEC Reports will indicate that this paper evaluation is actually an exercise in futility. More often than not all vendors who respond to RFP also clear TEC. When it comes to providing equipment for trial and evaluation, more than 50% vendors back out. Technical bids would still be required for Trial Team to evaluate compliances to RFP parameters. Doing away with TEC will substantially reduce procurement time as well.

12. **Para 59: Field Evaluation (Trials)**

(a) Although para gives procedure about debriefing of vendors in a common meeting as regards performance of their equipment, it is still ambiguous for different interpretation. To ensure transparency in conduct of Field Evaluation, it may be stated more clearly as “At the end of each day of trial, Trial Team will debrief the vendors at a common place, where performance of vendors’ equipment with regards to compliance/noncompliance of RFP parameters will be announced in the presence of all the vendors. It will also be ensured that all such daily verbal communications regarding performance of the equipment will also be given in writing, duly signed by OIC Trial, to all the vendors within 24 hours of the meeting. Same process will be followed in the other evaluation as well.”

13. **Para 58: Resultant Single Vendor or Only One Vendor Fields Equipment for Trial and Evaluations.**

(a) This Para should also amplify that procurement process will continue even if a single vendor situation arises after TEC or only one vendor fields Equipment for trial and evaluations.

14. **Para 69(a): Benchmarking by Costing Committee.**

(a) Vendors are submitting their bids in a Competitive Environment. There should therefore be no need for any commercial negotiations with L-1 Vendor and therefore there should be no need for Benchmarking by Costing Committee for each and every case. It is understandable if Benchmarking is carried out in a resultant Single Vendor case. Even here advantage may be given to Single vendor since he did not quote knowing that single vendor

situation will arise. This procedure has added inordinate delays to procurement Process.

15. **Paras 75-86: Contract Negotiation Committee (CNC).**

(a) A Clause may be inserted at a suitable place that in case negotiations with L1 Vendor fails due to some reasons, negotiations will be carried out with L2 Vendor and efforts made to conclude contract.

16. **Para 96: Subsequent Procurement of Already Contracted Equipment.**

(a) Following issues are highlighted for consideration and incorporation in the paragraph:-

(b) Restriction of 100% of previous order should not be there in case of the equipment/systems/platforms which fulfil all of the following criteria:-

(i) If the item is a scaled item which has been inducted in to Service as per existing procedures.

(ii) GSQR of the item has not been changed at the time of the Repeat Order.

(iii) First procurement of the item has been carried out in a competitive, multivendor scenario as per the provisions of DPP in vogue.

(c) There should be no restriction on numbers of Repeat Order so long as above stated condition remain unchanged.

(d) Subsequent procurement of already contracted equipment should be cleared by CFA on file rather than routing it through SCAPCC, SCAPCHC, DPB/DAC. It will expedite the procurement process and availability of the equipment to the user.

(e) Clause regarding AoN for repeat orders within five years of date of completion of warranty on final delivery should be removed.

17. **Para 3(q) of Appendix C.: Timeline for Procurement.**

(a) Most procurement cases are invariably delayed, notwithstanding time lines given in DPP. This must be corrected. It is therefore proposed that timelines for completion of various activities are seriously discussed and approved at SCAPCC/ SCAPCHC and DAC. Para 3(q) of Appx C needs to be suitably amended to meet this requirement and Annexure I to this Appendix be changed as per suggested Format below:-

PROPOSED TIMELINE FOR PROCUREMENT (IN WEEKS)					
Ser No	Stage of Procurement	Timeline as per DPP 2016	Recommended Timeline by User	Approved Timeline	Reasons for giving more than DPP time limit
10	Completion of field evaluation	16-24	20	16	NA
11	Completion of staff evaluation	4	6	6	There are 10 companies whose equipment was trial evaluated. Analysing so many reports will take more time
15	Obtaining CFA-CCS Approval	6-16	4		-

(b) Approved Timelines should be included in RFP for strict implementation and monitoring.

18. **Appendix D: Defence Offsets:**

(a) **Information regarding Procurement Cases Requiring Offsets.**

Responsibility of choosing an IOP for discharge of offset obligation is that of Foreign OEM. However, these FOEMs do not have much knowledge about Indian companies who can help them in discharge of the offset obligations. At the same time, Indian companies particularly MSMEs are also not aware of the offset related opportunities unless they make special efforts for the same. Thus because of the gaps in information at both ends, offset suffers. It is therefore recommended that as and when an RFP is issued which requires offsets, list of the recipients of the RFP should be made public either at MoD website or through CII/FICCI/ASSOCHAM so that Indian Companies can learn about the project and approach the Foreign/Indian OEMs (and through them to their Tier 1 vendors) with their proposals as IOP of that foreign/Indian Company. It will help MoD, FOEM and IOP alike. Alternatively DOMW should take on this responsibility of disseminating such information on request.

(b) **Definition of IOP.** Definition as given in DPP 2013 about the qualifications of an IOP is quite vague which leaves FOEMs unsure whether an Indian Company qualifies to be an IOP or not. Same is the case with Indian companies as well who are equally unsure if they qualify to be an IOP. It may be recalled that some time back MoD had issued a clarification that IOPs need not necessarily have Defence Industrial License. But such doubts still persist. It is therefore recommended that the chapter dealing with the definition &

qualification of IOP is better articulated so that there is no ambiguity what so ever.

19. **Appendix H: Broad Time Frame for Procurement Activity**

(a) Since the table starts after ‘Acceptance of Necessity (AON)’, it does not give the correct picture of total time taken to complete the procurement process. If we take into account various activities prior to and including AON, we may realise that it take almost five years or more for a simple procurement case to complete. We therefore recommend that broad time frame should take in to account time for various other activities prior to and including AON. Thus the table should start with ‘Inclusion of Procurement in AAP’ and should also include ‘Issue of RFI’, ‘Preparation & Approval of GSQR’, ‘AON’ as well.

(b) In order to reduce the time taken to complete the procurement, there is a need to undertake concurrent activities and to relook at the allotted time for various stages of procurement. Timelines given in Appendix H need a relook.

20. **Miscellaneous Recommendations.**

(a) **Feedback to Vendors.** While Transparency is listed as one of the Aims of Capital Acquisition as given at Para of chapter I of DPP 2016, it has been the experience of Industries participating in Defence Procurement that no information is divulged to the vendors at all, how so trivial it is. It may be appreciated that vendor too need regular feedback on the movement of the procurement case so as to take decision on commitment of his limited human, material and financial resources. User should willingly provide such information to the vendor so long as requested information does not violate

security, impartiality or any such consideration. A suitable clause may be added in DPP for the purpose.

(b) **Users' Trial.** It has been the experience of the Industry that User Trial of the equipment is perhaps the weakest link in the procurement process. Trial Team has very little or no exposure of Defence Procurement. They do not perhaps understand the sanctity of GSQR, their compliance etc. OIC Trial, being CO of a unit, is too busy to devote the kind of time required for a fair trial. Other members are equally busy in many unit/formation activities. Thus it is left to one young major to conduct trial. Individual perceptions too come in to play in the process of trial. It is therefore felt that one officer each from WE Directorate & DGQA should be the members of the trial Team and be present for as much time as possible during the trial.

Amendments in Chapter III

21. 'MAKE' procedure has been the part of various Defence Procurement Procedures (DPP) released from time to time, latest being DPP 2016. These procedures have also been amended from time to time to make them simpler and doable. However, despite of being in existence for 15 years and despite the efforts made to simplify the procedures, MAKE Procedure has actually failed to deliver. Firstly, very few procurement cases (can be counted in single digit) have been categorised as MAKE, secondly none of these MAKE cases have reached anywhere near fructification and are not likely to fructify in near future and thirdly quite a few of them have been foreclosed. Thus there is a problem which needs to be looked into.

22. Very definition of MAKE was flawed in DPP 2013 and also earlier DPPs. Same was pointed during formulation of DPP 2016 and was corrected in DPP 2016. Now since MAKE was redefined, procedure to do MAKE project should have

changed as well, which did not happen. MAKE procedures need to be looked at DE-NOVO.

23. Defence Procurement Procedures as given in Chapter II of DPP have proved to be very effective as hundreds of procurement cases worth thousands of crores have been successfully concluded since inception. Thus MAKE procedure should be as close to Chapter II procedures as possible. It is questionable if Chapter III is really needed at all. Why do we require a separate procedure for MAKE category. Why do we require PSQRs, Feasibility Studies, IPMTs, PDDs, DPRs and so on and so forth. Why is MAKE considered to be special type of procurement. Why can it not be like other five categories, thus have similar procedure.

24. It is felt that MAKE should not be used for development of high value, system of systems type of procurement cases, such as FICV, TCS, BMS etc. These procedures should rather be used for development of capabilities rather than systems. For example, what is TCS? It is a System of Systems such as Radio Relays (2 megabyte (mb) , 8 mb, 34 mb or higher capacity), multiplexers, routers, switches, trunk/access switches, HF/VHF radios, RTS, RLS, encryption devices, generators, shelters etc. All these systems or subsystems can be independently developed under MAKE or any other categorisation by various Indian companies which have the proven capabilities to do so. Once these systems are developed and are available, TCS will automatically become a reality.

25. Funding a MAKE Project by the government is a good concept. However, the funds should be used for larger number of projects and for development of critical technologies.

26. Is there really any need to carry out 'FEASIBILITY STUDY' to arrive at the capability of Indian Industry to do a MAKE Project? It is time that MoD believes that

Indian Industry is capable of doing MAKE projects. Think Tanks in MoD, HQ IDS, Service HQs and Industry Associations are capable of taking decision as to which project is to be done under MAKE category. MoD may therefore consider doing away with this practice and concentrate on identifying products to be developed under MAKE category and select right companies to do the job.

Amendments in Chapter III (Make Procedure)

27. MAK II Procedures have been inducted as Chapter IIIA of DPP 2016 quite recently and in a very short time, these procedures have proved to be quite useful as very large number projects are today listed to be taken up as MAKE II cases and quite a few of them are on the verge of fructification. Procedure has also been simplified a lot and is quite close to procedures followed under Chapter II of DPP 2016.

28. It is, therefore too early to recommend changes. However, a few issues that merit attention are listed below:-

(a) We feel that Procedures can be further simplified if keeping in mind FOCUS OF MAKE II as given at Para 1 of Chapter IIIA. We believe that Chapter II procedure can be adopted with minor changes.

(b) **Make - Project Management Unit (PMU)**. PMU may not be necessary if procedure is further simplified as stated above. Line Directorates are competent to steer a MAKE II project successfully.

(c) **Feasibility Study**. We feel that Feasibility Study for MAKE II Cases can be done away with. Instead we resort to RFI, as in Chapter II to find out if Indian Vendors can do it. Feasibility Studies are taking years to complete, defeating purpose of expeditious acquisition.

(d) **Expression of Interest (EOI).** We feel that EOI should not be posted in open domain. It should be issued to only those companies who have participated in the procurement process right from the beginning.

(e) **Tentative Time Lines for Make-II Projects.** It has been experienced time and again that Time lines as given at Appendix B to Chapter III A are not at all being adhered to. For example Feasibility Study seems to be an unending process. for most cases it has been going on for years. Same is the case for other activities too. MAKE II will not succeed if projects are not executed efficiently.

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