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Celebrating 6th Anniversary

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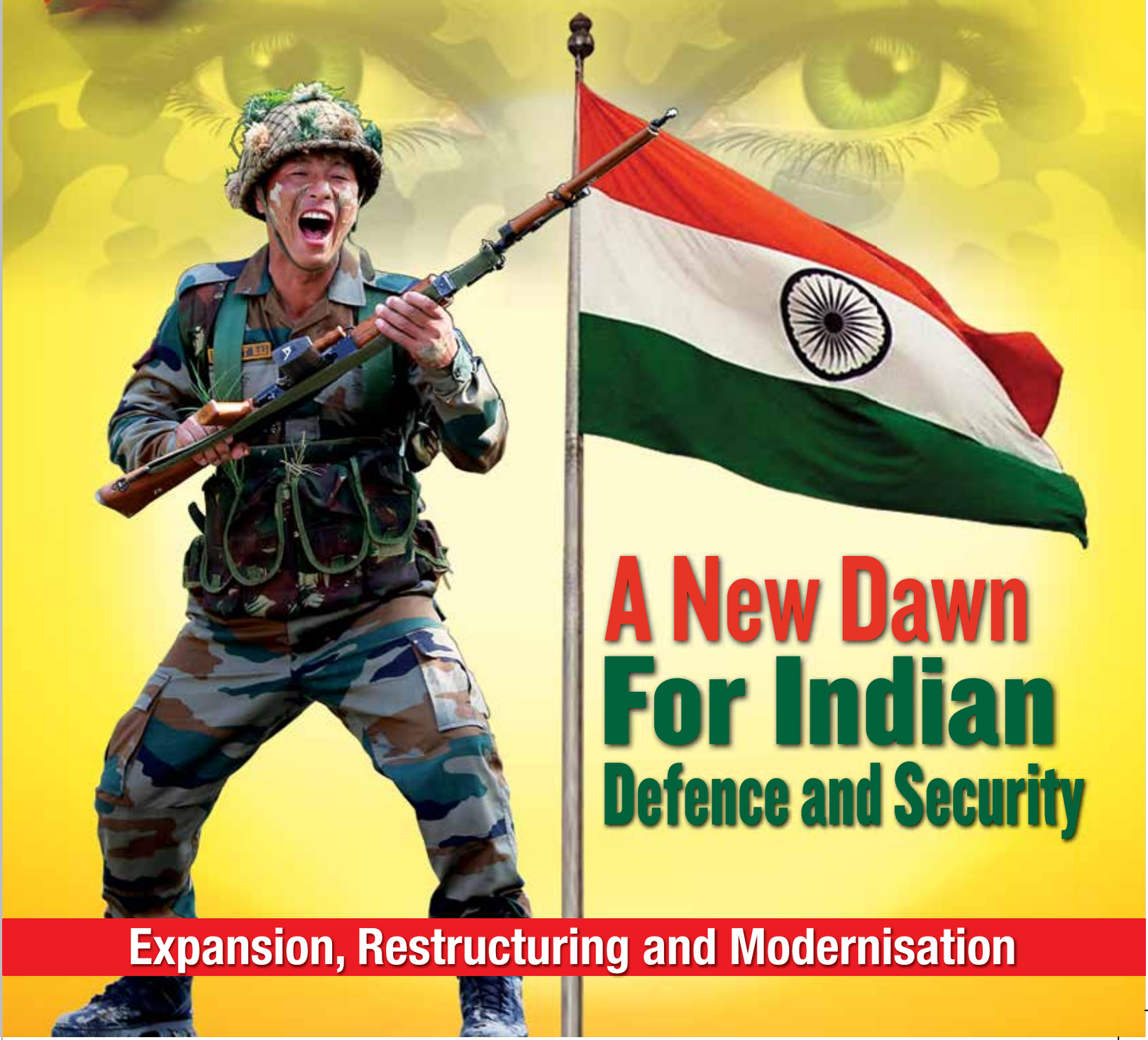

A New Dawn For Indian Defence and Security

Expansion, Restructuring and Modernisation

Celebrating 6th Anniversary

DSA is as much yours, as it is ours!

The People's Liberation Army of China has recently announced that it would be shedding about 300,000 troops from its standing manpower strength. What makes it even more noteworthy is that the plan is to complete the trimming in 2017. In routine course such cuts take time to be worked out, calculated and an even longer time to implement. It isn't an easy exercise to shed weight, let alone hundreds of thousands of troops of an army that happens to be one of the principal power players in a country that seeks the world stage. China aims to do just that.

There are lessons in this for India, not because it is going to make the border standoff between the countries any more solution friendly. Far from it. The reasons that it should be of interest to India range from the everyday logistical, pay and allowances and tactical, to the larger philosophical ones that cover everything from the nature of future conflict, national security threats, economic and strategic logic of pursuing those targets. And to the most cost effective way to managing and overcoming those threats. Of course the nature of threats and challenges faced by China are vastly dissimilar to those confronting India.

India must nevertheless analyse and understand the motives behind China's move and draw lessons from it if New Delhi seeks to usher in a new era for defence and security in the country. In this regard, as a first step, the closure of the One-Rank-One-Pension issue is a most welcome development. No country can be secure and progress if its most valuable option, its soldiers, are disquieted by developments that impinge on their sustenance. A lot of morale is affected by the economic well-being of a soldier. So progress on that front is welcome and provides an opportunity to look ahead. The same should be carried out in the new pay commission.

A relook at the entire gamut of defence and security must happen periodically for factors that affect are not constant. Since society and the factors governing threats are dynamic so should be the nature of national defence and security. Static thinking, planning and rigid structures, are a thing of the past. The need is for a new paradigm in defence and security, with a view to instilling dynamism. Every aspect needs to be looked into, analysed in detail and appropriate conclusions derived.

A crucial question always is how much is enough. There is no fixed formula for this and since not much effort is devoted to threat analysis, the easiest option is always to keep expanding. Constantly adding numbers, without a worry for the consequences, since it is the least troublesome option. Mass provides muscle, so the thinking goes. And the expansion of various central police organisations, elements of the army and other defence structures, continues unabated. This needs to be rationalised, for the 21st century order is also about technology. It isn't simply a question of constantly raising battalions, but the judicious application of force so as to get the best performance from national resources.

Such resources must be placed on the table when looking at the restructuring of national defence and security. A thorough analysis of each service has to be done, starting with the most difficult of all, the army. And it must include all CPOs too. How they are structured, trained and deployed for the tasks at hand. Only then will the duplication of duties, excess baggage and lack of jointmanship come to the fore. The three armed forces have to be pushed into creating Tri-Service structures. The sooner they begin the process, less painful the result. The delays till now have cost India valuable time, money and capabilities. Integrated armed forces and integrated police security structures is a requirement of the future and the time is now. Even as it enhances capabilities, integration also encourages efficiencies of economy. In the current economic climate that is also a vital requirement.

All too often the word modernisation is equated with newer weapon systems, from small arms to heavy combat aircraft. Modern weapons certainly make a difference, but what makes the most impact is new thinking, training, planning, technology lethal or non-lethal and the systems that draw out the best from all of these features. That requires modern thoughts, so as to create modern structures, which then will fight modern wars with modern weapons. The nature of war has changed, so has weaponry, but structures continue to remain antiquated. 21st century challenges can only be met by 21st century manpower, structures and technology. Fitting each essential piece of the jigsaw is critical.

Manvendra Singh

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Reflections For New Direction

As a conscientious and responsible citizen of India I was shattered and very disturbed by the 26/11 terrorist attack and mayhem at Mumbai. More so by the fact that India was caught unawares and totally unprepared for such an onslaught. 26/11 triggered a chain of thoughts and cerebrations along with my friend and former member of Indian Parliament Manvendra Singh that culminated in the idea of creating a platform that will facilitate dissemination, discussion and debate on defence and security of India and the world. Thus was conceptualised and born ***DSA.***

The magazine was envisioned as the harbinger of a paradigm changing brave new world of defence and security journalism committed to creating awareness among the people of India about the core requirements for a viable defence and security environment. Since then, not a day has passed when some new military threat or danger or a new far-reaching political development has not rudely impinged on the conscience and elicited stark reactions. Through this space in Publisher's View I have tried to create a sentience and sound an Alert just as I had envisaged while mulling over the *raison d'etre* of ***DSA,*** which I thought was long overdue in the rapidly changing circumstances, not just on the Indian periphery but also within India and around the world.

Over the years as CEO of ***DSA,*** I have encapsulated the focus areas of every edition, every month in Publisher's View. It has been an exhilarating learning experience to understand the nuances highlighted by experts and stalwarts we have been inviting to share their perceptions of the fast-changing defence and security developments and scenarios. There has been a steady growth in 'security consciousness', which was absent from the Indian psyche since the dawn of independence, as highlighted by observers. Writing for an Anniversary Edition requires a yet higher zealous stimulation to chronicle how events have evolved. It is a moment for retrospection, evaluation, corrections and re-charting courses as the expectations from ***DSA*** multiply.

The transformations in the defence and security arena during the past six years have veritably been a paradigm shift for India along with the rest of the world. New challenges and threats have emerged. Like any other industry, there have been mergers and acquisitions in the Defence sector during the last one year and the same in India has been particularly thrilling with the new government making big ticket announcements in the interest of national security. These alluring developments have compelled international manufacturers of defence technologies and products to flock to India in an anticipation of a piece of the cake from the establishment of a world-class defence and security industry hub.

With Modi government at the helm since May 2014, there has been a concerted effort to amend an unacceptable status of being 'the world's largest importer of arms and ammunition' with emphasis on 'Make in India' through partnerships with foreign original equipment manufacturers. Many leading companies from US, Israel, France, UK and Russia etc have started exploring for new strategic partners in India and likewise many Indian companies are also keen on mutually rewarding tie-ups with international defence and security giants. Another major announcement of creating 100 Smart Cities in India has also captivated major international companies that have planned and executed such projects in other parts of the world.

DSA has been avidly following these transformations with intellectual stalwarts ardently analysing events and scrutinising effective solutions to tackle these emerging developments.

The past twelve editions of ***DSA*** have comprehensively deliberated on the following topics:

- Indo-US Strategic Partnership, Indian Air Force – New Challenges
- Northeast: A Ticking Bomb
- Growing Importance of Indo-Pacific Region, Indian Navy – Maritime Muscle
- Indian Army – The Changing Security Paradigm
- Aero India 2015, Pre-budget Musings
- Women In Defence And Security, Time For Military Industrial Complex
- Global Terrorism: Trends And Prospects – Impact on India
- One year of Modi Government – Defence And Security Appraisal
- Modernisation of Police Forces
- Make In India In Defence – Making India Self-reliant
- Indo-Pak War 1965, J&K – A Festering Chasm
- National Security, Securing Smart Cities

With a future that stipulates even more instability than the past six years, Prime Minister Narendra Modi of the BJP led National Democratic Alliance has sought to retain centre stage by his outreach to India's neighbours from island territories to the huge landmass of China. Back home, old provocations are acquiring new dimensions with the China-Pakistan nexus fashioning what one of our contributors has described as a 'steel collar around India's neck'.

The full potential of recent Naga accord is yet to be fathomed but there is no gainsaying the salutary effect of the land boundary agreement and exchange of enclaves with Bangladesh even while illegal migration remains a touchy subject. As a bright spot on the horizon, India displayed a new dimension to its military preparedness by its 'hot pursuit' strike against Myanmar-based terrorists.

India continues to be embroiled in Left Wing Extremism and the possibility of terrorists/extremists of various hues seeking to coalesce their operations. As a consequence the requirement of modernisation of the armed forces as well as the paramilitary and police forces (both Central and State) has acquired a desperate urgency.

Ironically, the nation has been in a sad state of dilemma by the agitation of ex-Servicemen for 'One Rank, One Pension', which has remained unresolved for decades. The new government has announced a slew of proposals but many agitating veterans are not happy and unfortunately the stalemate continues.

Globally, the security situation has deteriorated and its baleful shadow is creeping towards India from the trouble-torn West Asia-Levant salient where external powers, too afraid to put boots on the ground are wreaking havoc on the landscape from the air. The mindless bombardment has unleashed waves of human migrants who are perceived as a threat to the culture and lifestyles of the Europeans. How complicated the situation is can only be judged by the fact that Turkey is bombarding the Islamic State of Iraq and Syria (ISIS) and the Kurdish Peshmerga fighters even as the Kurds are trying to roll back the ISIS. In Syria where the Western coalition is trying to topple the Assad regime, Russia is on Assad's side because of the threat posed to itself by ISIS and the Americans are trying to overthrow Assad who is fighting the ISIS that was created by the US in the bloody crucible of Iraqi sectarian divide between the Shia majority and the Sunni minority. The same divide has consumed Yemen where Sunni Saudi Arabia is bombing Shia Houthi rebels, turning townships into moonscapes. The recent joint operation by the bloodthirsty Boko Haram and Pakistan-trained Lashkar-e-Taiba and other such jihadi outfits in east Africa is a pointer for looming disaster. Indications that India is the next target need to be contemplated earnestly.

I have been affirming that candid and unflinching dissertations from distinguished veterans and experts of the defence and security fraternity have skyrocketed ***DSA*** to prestigious positions on the Intranets of Armed and Paramilitary Forces and have facilitated applauds and laurels from the powers that be. On behalf of team ***DSA***, I salute them and feel grateful for their support which I will always cherish.

It has been an extraordinary experience to witness how a soldier is crafted; the inspiring truth of the saying, 'once a soldier, always a soldier' with the same dedication and commitment he/she has on the first day of their induction; the unparalleled feeling of nationalism is way ahead and beyond all relationships for a soldier. This commitment has inspired and reinforced my vision to make ***DSA*** the most sought after magazine in defence and security journalism.

Understanding the readership, target audience and outreach of ***DSA***, corporate leaders of the defence and security industry have been supportive to our endeavours by advertising in various print and online editions. We strive to offer exceptional quality in everything we do and issue after issue of ***DSA*** bears testimony to the laurels coming our way from around the world, some of which we are happy to share with you in this edition. These testimonials bolster our resolve and fortify our mission of sounding ALERTS and creating AWARENESS about the myriad dimensions and manifestations of DEFENCE and SECURITY in India and around the world.

As they say, 'Teamwork makes the dream work'! Individually, I am a drop. But together with my team, we are an ocean. Every team member of ***DSA*** is a soldier … dedicated to my vision and working towards the same in unison. I feel delightfully proud of their achievements and extend my gratitude for being the backbone of ***DSA***. My colleagues have made this six year journey a pleasant odyssey and an incredible experience.

Team ***DSA*** is committed to spreading awareness of the dangers that confront us within India, around our periphery and distant horizons. We also take pride in our endeavours to explore mechanisms of achieving peaceful coexistence among the nations and the peoples of the world and propagate the cardinal Indian concept of *Vasudhaiva Kutumbakam:* One world – one family.

Jai Hind!

Pawan Agrawal

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INDIAN AIR FORCE SENTINEL OF THE SKIES

Chief of the Air Staff ACM Arup Raha PVSM, AVSM, VM, ADC in an exclusive and wide-ranging interview with *DSA* expounds his views and shares his vision for the Indian Air Force.

Defence and Security Alert: **According to a report of the Standing Committee, the effective squadron strength of the Indian Air Force could go down to an alarmingly low level in future unless urgent steps are taken to arrest the decline. In hindsight, do you think it was wise to overlook the concerns flagged by the Finance Division in 2012 itself and prolong the *Rafale* negotiation for more than three years?**

Chief of the Air Staff: Today, the IAF has 35 Fighter Squadrons against an authorised establishment of 42, including several Squadrons of *MiG-21* and *MiG-27* aircraft, which will retire over the next decade. Timely procurement of replacement aircraft is therefore crucial for the IAF's capability-building and for meeting its tasks and responsibilities. In the original MMRCA procurement case, a stalemate was reached in the negotiations. Recognising the critical operational necessity for Multirole Combat Aircraft for Indian Air Force, Government of India decided to acquire 36 *Rafale* aircraft expeditiously through an Inter-Government agreement.

There is a renewed thrust towards facilitating 'Make in India'. We are hopeful that in the coming years, most of our requirements will be met by Indian industry

DSA: **What is the status of the proposed G2G purchase of 36 *Rafale* aircraft? Could you please throw some light on the reports that the IAF wants 56 and not 36 aircraft to be bought and also wants some modifications to be done by the manufacturers before the aircraft are delivered? If so, will it not require the aircraft to be trial evaluated again? By when is this deal expected to be signed? What is holding it up presently? Are there any offsets as part of this deal? Will this deal help in the 'Make in India' campaign?**

CAS: The contract negotiations for the 126 MMRCA had reached a stalemate and the process was not making any headway for almost two years. Realising the critical operational necessity of fighter aircraft in the IAF and likelihood of further delays in concluding the MMRCA contract negotiations, the Government of India decided to procure 36 *Rafale* aircraft from France through an Inter-Government route. The negotiations for the procurement of 36 *Rafale* aircraft from France are presently in progress. The requirement of fighter aircraft for the IAF is known to the Government and it would take a decision on induction of additional fighter aircraft in due course. The procurement of 36 *Rafale* aircraft includes 50% offsets which should help our medium and small scale industries in the aviation ecosystem.

DSA: **Indian Navy has recently come out with a document called the Indian Navy Indigenisation Plan 2015-30. Does Air Force have a similar plan or, if not, does it intend to bring out such a plan to enable the Indian industry to prepare itself to meet the future requirements of the Indian Air Force?**

CAS: The IAF has always supported and encouraged indigenisation of defence equipment. From the days of the indigenous *HF-24 Marut* and the *Gnat* derivative *Ajeet*, a large portion of the IAF's inventory has comprised indigenously manufactured equipment. HAL has built *MiG-21*s, our mainstay for several

CAS Air Chief Marshal Arup Raha

decades, the *Jaguars*, *MiG-27s* and is now making the *Su-30s*. The Light Combat Aircraft LCA is an indigenously developed aircraft. The *HT-2*, *HPT-32*, *HJT-16 Kiran* and a large portion of the ongoing *Hawk* trainers are all built in India. The *Avro*, *Dornier* as well as *Cheetah*, *Chetak*, *Cheetal*, Advanced Light Helicopter (ALH) have been manufactured in India; the under-development LCH will also be manufactured in India. With induction of *Akash*, *Astra* and the *BrahMos*, several weapons in the IAF inventory would be of Indian origin. BEL-manufactured radars like the *Rohini*, *Aslesha*, *Arudhra*, *Ashwini*, the indigenously-developed IACCS network, as well as airfield infrastructure upgrade are all in-country products. Several Electronic Warfare equipment onboard IAF aircraft are indigenous. You will be aware that the IAF is upgrading most of its platforms like the *Mirage-2000*, *MiG-29*, *Jaguar*, *An-32* and *Mi-17* series helicopters as well as doing obsolescence mitigation within India. Several Research and Development programme like the AEW&C and AWACS (India) are also happening in the country. The Services have prepared a Technology Perspective and Capability Roadmap which broadly lists out the long-term requirements of the IAF. The Government policies are in public domain, allowing greater participation by industry. There is a renewed thrust towards facilitating 'Make in India'. We are hopeful that in the coming years, most of our requirements will be met by Indian industry.

DSA: What is the thinking on making the fighter and other aircraft in India after the deal for 36 or 56 aircraft is signed and operationalised? When do you think the Replacement of *Avro* deal will start yielding results?

CAS: There is a concerted thrust towards creating a robust aviation industry in India. To meet the IAF's requirement of fighter aircraft, MoD is considering all options for indigenous manufacture of combat aircraft. In addition to the LCA, which is under production, the IAF is also looking forward for Advanced Medium Combat Aircraft (AMCA), the indigenous fifth generation fighter aircraft. The *Avro* replacement and the Light Utility helicopter programmes will provide the desired fillip to the private aerospace manufacturing sector. They will be the launch pads to bring the Indian aerospace industry up to global standards. Transport aircraft and utility helicopters are dual use platforms with several non-military applications; hence, there is a huge potential for sale of both these platforms within India and abroad. The *Avro* replacement aircraft is presently at evaluation stage and we expect the programme to materialise within two years of signing the deal.

DSA: What is the status of the Fifth Generation Fighter Aircraft (FGFA) project? What other major platforms are on the wish list of the Indian Air Force? Do you think budgetary allocation already is, or is going to be, a constraining factor in buying what the Indian Air Force needs?

CAS: The Inter-Governmental Agreement (IGA) for development and production of FGFA was signed on 18 October 2007 between India and Russia. There are certain issues with respect to technical features, costs and timelines of the project. Our concerns have been conveyed to the Russians and are being addressed at the highest level. The Indian Air Force is continually enhancing its capabilities across the entire spectrum of air power employment. Towards this, cases for procurement of Heavy Lift Helicopters, Attack Helicopters, Flight Refuelling Aircraft and AWACS are at advanced stage of processing while additional *C-130* aircraft contract has already been signed. The negotiations for the *36 Rafale* aircraft are progressing with the French side with intent to finalise an agreement at the earliest. The Government is aware of the operational needs of the IAF and efforts are being made to meet our requirements. Budgetary constraints are not unique to India; in fact, all Armed Forces across the world face budgetary constraints. IAF's requirements have been projected to the Government and they have assured maximum allocation within the available resources.

Budgetary constraints are not unique to India; in fact, all Armed Forces across the world face budgetary constraints

DSA: What is the status of modernisation of the existing airfields and activation of the airfields lying unused, especially in the Eastern sector?

CAS: Modernisation of airfields is a continuous and ongoing process. IAF regularly undertakes resurfacing, strengthening and if required, expansion of aircraft operating surfaces and infrastructure. Fifty two IAF airfields have been identified under Modernisation of Airfield Infrastructure (MAFI) Project. The project is planned in two phases. All these airfields will be fully geared up for all-weather operations. The pilot project at Bathinda was commissioned last year and five more bases would be operationalised soon. A survey of disused airfields is in progress. Airfields found suitable would be utilised for air operations. In addition, modern indigenous and fully networked Surveillance radars are being installed at these airfields.

DSA: What specific steps have been/are being taken for air safety? Is the phasing out plan of the older *MiG* aircraft on schedule? Also, what is the present serviceability level of the air fleet?

CAS: The Indian Air Force has taken various measures to reduce aircraft accidents. Measures like Operational Risk Management (ORM), Crew Resource Management (CRM) and Air Force System of Error Management (AFSEM) have been implemented to generate a safe flying culture. Accident prevention programmes such as Accident Probability Factors (APF) have given an added thrust to identify risk prone/hazardous areas specific to the aircraft fleet and operational environment to ensure safe practices/procedures at each flying base. To carry out investigation of all major accidents, Aircraft Accident and Investigation Boards (AAIB) have been constituted at Air HQ. There has been a streamlining of accident/incident reporting procedure along with establishment of an Ornithology Cell which carries out bird surveys at flying bases and suggests bird prevention modules. IAF has several Squadrons of *MiG-21* and *MiG-27* aircraft, which will be phased out over the next decade. Our serviceability status of various aircraft and equipment has been good through better spares support and faster repair and overhauls.

DSA: After a gap of nine years, MoD has recently revised the financial powers delegated to the services for revenue procurement. Is the IAF satisfied with the orders? If not, why and what has been MoD's response, assuming that the difficulties have been brought to the notice of the ministry?

CAS: The revision of financial powers delegated to the Services is a welcome step. However, certain areas of concern with respect to the delegated financial powers and creation of additional layers in the decision-making process have been taken up with MoD and resolution of the same is in progress.

DSA: The capital procurement procedure is widely seen as complex and cumbersome. The Committee set up by the MoD has submitted its report. Has the report been shared with the Services and, if so, do you think the recommendations of the committee, if accepted by the government, would fix the problem faced in regard to capital procurements? Do you think there is a case for enhancing the powers delegated to the Services for capital procurement?

CAS: Yes, the report of the committee has been shared with the Services and comments of the Services and other stakeholders are being considered to finalise the implementation of recommendations. The revised edition of DPP will certainly be an improvement on the existing procedures with thrust towards 'Make in India'. Over the years, the delegated powers of the Services for Capital procurement have seen a steady increase. I am sure that in the future, these limits will be enhanced further.

DSA: In the past, the IAF seemed not to have any reservations about the idea of creating a Chief of the Defence Staff? Now that the idea of creating a permanent Chairman of the Chiefs of Staff Committee is back on the government's agenda, going by the statements of the Defence Minister, what is the stand of Indian Air Force on this issue?

CAS: The creation of CDS is an incremental process and has been supported by the three Services and other agencies. As per Naresh Chandra Task Force's recommendations, the Chairman COSC would be one of the three Service Chiefs appointed by the Government and be the single point contact between the Government and the three Services. He would thus be the fourth four star officer who would also be responsible for the various Tri-Service Operational Commands. The Service Chiefs will continue to exercise operational control and staff functions over their respective Services and have direct access to RM. The proposed set up will allow HQ IDS under Chairman COSC to function as an effective advisory system to the Government on matters of policy, joint acquisitions, joint capability building and training. The issue is pending with the Government.

The creation of CDS is an incremental process and has been supported by the three Services and other agencies

DSA: Do you think that the Services may like to incorporate experts/designers/technocrats as part of their team to frame GSQRs/ASQRs /NSQRs? Many are of the opinion that it is the faulty set of QRs that are responsible for delayed procurement for the Armed Forces. How do you wish to improve the system?

CAS: Procurements do not get delayed on account of framing of Service Qualitative Requirements (SQRs). Even the Ravindra Gupta committee has commented favourably on this account. We have statistics to prove that procurements do not get delayed because of SQRs. Air Staff Qualitative Requirements (ASQRs) emanate from the way IAF wants to fight the war or ensure deterrence. The finalisation of the ASQRs is undertaken in a collegiate manner with professionals well embedded in the system and with full domain expertise. The present process has been made robust to ensure the involvement of all required experts in the formulation of SQRs.

NAVIGATING CHANGING SECURITY LANDSCAPE

INDIA'S SEARCH FOR AN EFFECTIVE STRATEGY

As India's economy becomes more globalised, the importance of external engagement will increase even more than it is today and our attitude towards the WTO must reflect this reality. It is true that India's future will be determined by how successful it is in tackling its numerous and formidable domestic challenges. However, it is equally true that active and expanded engagement with the world will increasingly be an indispensable ingredient of that success.

India's national security strategy must be formulated in a regional and global geopolitical landscape which is in rapid flux and constantly mutating. Similar inflection points have emerged earlier in history, though not on the scale and at a speed that is apparent today. In the 19th century, the well-known German statesman, Otto von Bismarck, reflected on the wrenching political changes then roiling Europe:

"We live in a wondrous time, in which the strong is weak because of his scruples and the weak grows strong because of his audacity."

Bismarck's words may well apply to the current turmoil and uncertainty which afflicts our world today. The powerful nations of yesteryear appear to be harassed by multiple crises political and economic into a state of virtual immobility. They may be likened to Jonathan Swift's Gulliver, who was tied down by audacious Lilliputians, with their own tactics of 'shock and awe'.

Shift In Centre Of Gravity

It has been apparent for some time, but particularly since the horrific terrorist outrage against the US on 26/11/2001 and the subsequent global financial and economic crisis of 2007-08, that the post Second World War international order, created and dominated by the US and its Western allies is being steadily and relentlessly dismantled. The centre of gravity of political and economic power is steadily and unmistakably, shifting from the trans-Atlantic to the trans-Pacific, in particular, to newer centres of power and influence in Asia. The post-war order is also being undermined by the conduct of the Western countries themselves. They themselves are increasingly guilty of expedient and selective adherence to the rules and norms they had a hand in establishing as their relative dominance has diminished. The advance of technology has also played a role. The newer domains of space, of cyber pervade all aspects of contemporary life. In some way, they have added immense new power to States. In other respects, they have empowered individuals, groups and non-State actors in general to an extent that is unprecedented. One witnesses this in the fallout of the Snowden affair. The pervasive use of the powerful cyber instruments empowered an arm of the State, the US National Security Agency, to a level of near omniscience. However, the same technological tools also empowered a single, determined individual, enabling him to strike a deadly blow to State power. These newer domains are pervasive but they remain ungoverned and are probably ungovernable.

ISIS Fits Bismarck Analogy

The malefic use of newer technologies is particularly visible in the activities of non-State and extremist groups, who indulge in 'shock and awe' tactics to threaten both States and fellow human beings. The ISIS in Syria and Iraq reflects the 'audacity of the weak' which Bismarck alluded to.

Traditionally, order in a regional or an international inter-State system has been achieved either through a broad political consensus among the major and influential State actors or it has been imposed by a powerful hegemonic State. Neither is in evidence today. Furthermore, even if a hegemonic State were to emerge or a cluster of States agreed upon the rules of the game in a new international order, would there

be peace and stability? In fact, it appears unlikely that the multiplicities which define our world today would respond to an ordered system.

It is against this background that India must seek to formulate a national security strategy.

Designating 'Strategic Neighbourhood'

In any consideration of national security challenges, one must begin by looking at a country's strategic neighbourhood which is the template defining its foreign and security policies.

What is India's strategic neighbourhood? It is the entire subcontinent, including the ocean space around peninsular India. This is the core from which historically, political, economic and cultural influences radiated outwards – across the seas, both East and West and across the mountains and deserts to the north towards Central Asia. This is still the mental map which drives India's strategic behaviour.

The Indian subcontinent and the eastern and western reaches of the Indian Ocean surrounding it, constitute a single interconnected geopolitical and geoeconomic unit, with a common history, constituting a shared cultural space and enjoying dense economic complementarities. Yet the reality today is that this strategic singularity is fragmented with the subcontinent divided into several sovereign, independent States, though India is by far the largest and most powerful entity. As the largest entity, India's strategic compulsions are still defined by subcontinental imperatives, transcending existing political divisions. Its defence cannot be conceived of within the confines of its national frontiers. Equally, India's influence cannot expand beyond the subcontinent without transcending the political boundaries that divide it.

In national security challenges, one must begin by looking at a country's strategic neighbourhood

The situation is further complicated by the fact that there are overlapping ethnicities, kinship and linguistic ties that spread across national boundaries. This is also the case with resource availability since the rivers, forests and the air are shared assets with divided use.

Fashioning Shared Strategic Perspective

Since India's independence, the persistent challenge for the country has been to reconcile its subcontinental strategic imperatives with the reality of a divided polity. Analytically speaking, there are only two ways that India could restore a coherent, unified and effective strategy for the subcontinent, which is aligned with the geographic, historic and cultural reality that it represents – either by being powerful enough to impose its strategic perspective on the constituent units – like a Pax Indica – or through a mix of political, economic, cultural and security related policies which create dense interdependencies. These in turn permit it to transcend though not erase existing political boundaries. In the latter case, the country could utilise its size and overall capabilities and, therefore, its asymmetrical strengths, *vis-à-vis* its neighbours, as an asset, with the objective of achieving a level of interconnectedness, rendering borders irrelevant. The positive experience of dense engagement and productive cooperation would, in time, create a stared strategic perspective. At least that is the hope. Whatever be the instrumentality adopted, overwhelming dominance or cooperative engagement, the enduring challenge is the same, though manifested in different ways in different historical phases – that of transforming a contested geopolitical space into one which is aligned with India's own, more expansive and expanding strategic perspective.

Shyam Saran

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The Sundering

In early years of independence, two major developments occurred which have remained continuing and defining elements in India's strategic calculations; in some senses, they may have acquired a sharper salience over time. One was the partition of India in 1947 and the attendant conflict over Jammu and Kashmir. A geopolitical barrier appeared disrupting India's land access to the Gulf and West Asia and Central Asia. In the East, the creation of the erstwhile East Pakistan reduced India's access to its Northeast to a narrow and threatened corridor. The creation of an independent Bangladesh in 1971, reduced the security threat, but the relative isolation of the Northeast is only now being reduced as a result of improved relations between India and Bangladesh.

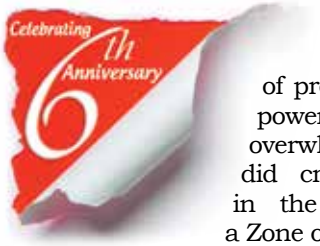
Two, the annexation of Tibet by China made India, for the first time in history, a contiguous neighbour of a major power, which impinged directly on India's strategic space.

Over the past nearly seven decades, it is the impact and persistent consequences of these two developments which have imparted a complex dimension to India's effort to resolve the subcontinent's strategic dilemma, particularly with the China-Pakistan alliance crystallising over time.

The Consequences

While India was able to retain the major part of Jammu and Kashmir, it did not, either by choice or compulsion, recover Gilgit and Baltistan, which would have at least ensured direct access to Afghanistan and Central Asia. Till today, India's Afghan and Central Asian strategy is severely constrained as a result. The occupation of Tibet in 1950 by China initially created the conditions for India to consolidate its presence and influence in the sub-Himalayan region. Nepal, Sikkim and Bhutan were, in the early years, fearful of China. India was able to essentially continue with the traditional British policy of guaranteeing their defence. India remained the dominant presence in these countries.

With respect to the island countries of Sri Lanka and the Maldives, India inherited the British mandate



of providing for their security as British power subsided. Nevertheless, the overwhelming reach of the US Navy did create anxieties which manifested in the advocacy of Indian Ocean as a Zone of Peace.

Securing National Interests

At various points in contemporary history, India has tried to alter the situation it has confronted though in an ad hoc fashion, either by taking advantage of opportunities that have presented themselves or by responding to local crises which have impinged on or had the potential of impinging on India's security interests. One may cite Indian intervention in Myanmar in the nineteen fifties to enable U Nu's government to counter the Karen insurgency then threatening the country's heartland. In 1971, Indian security forces were dispatched by the then Prime Minister Indira Gandhi to assist the Sri Lankan Prime Minister Sirimavo Bandaranaike to defeat the JVP insurgency in the island country. The same year, Indian intervention ensured the emergence of an independent Bangladesh, which was a major strategic gain for India. Sikkim was incorporated into the Indian Union in 1975, while subsequent interventions took place to secure Indian interests in both Sri Lanka and the Maldives in the nineteen eighties. Indian military and financial assistance to the Northern Alliance fighting the Pakistan sponsored Taliban regime throughout the decade of the nineteen nineties in Afghanistan is well-known.

India's strategic environment has undergone a significant change

Some Indian interventions have been political and diplomatic. India played a role in the restoration of multi-party democracy in Nepal in 1990/91 and later during the tumultuous events in 2004/05, when the Nepali monarchy was forced to yield place to a civilian political coalition that included the erstwhile Maoist insurgency movement. The movement was brought into the political mainstream mainly through Indian efforts. If we examine these interventions in a broader perspective, they reveal a pattern of behaviour driven by the sub-continental imperatives referred to above.

Proactive Posture

Since the end of the Cold War, India's strategic environment has undergone a significant change. With respect to the subcontinent, there has been a steady shift away from a mainly defensive and reactive approach to a more active, coherent and focused posture. The adoption of far-reaching economic reforms and liberalisation in 1990 led to an accelerated growth of the Indian economy and its steady globalisation. Over a period of time this also led to greater political confidence and expansion of the country's strategic space. The objective of seeking to align, as far as possible, the security perspectives of the countries of the subcontinent is now sought to be achieved through a process of intensive and high level political engagement, building a dense web of economic interdependencies and through leveraging the cultural affinities that bind the countries together. This will be an extended process and may be patchy in terms of results. Pakistan's 'audacity of the weak' may take longer to overcome but India will need to persevere.

As the largest country, it is only India which can lead the South Asia project, establishing cross-border transport and communication links, opening up its markets and its own transport system to its neighbours and becoming the preferred source of capital and technology for their development. We are concerned about Chinese inroads into the subcontinent but cannot deal with this by trying to compel neighbours to restrict their interactions with China or by urging China to stay away from what we regard as our backyard. The only effective answer would be to build a countervailing presence superior to China which is eminently possible given our geographical as well as cultural proximity to our neighbours. Our security preoccupations, including cross-border terrorism and activities of non-State actors, are likely to be addressed with greater seriousness if we encourage our neighbours to build a stake in India's own prosperity and capabilities.

Pakistan Factor

Pakistan's hostility must be chipped away at because the current adversarial relations with that country and its use of asymmetrical strategies do impose significant constraints on India. India may have to deploy counter-constraint policies in order to try and change the strategic calculus in Islamabad. It is important to recognise that the historic reconciliation that many on both sides of the border have been addicted to is not a credible possibility. The historical narratives of the two countries are widely divergent. We have different interpretations on Partition, on Kashmir, on the 1965 War, on the birth of Bangladesh in 1971, on the Simla Agreement, on the Kargil War in 1999 and on the Mumbai terrorist outrage in 2008. Until we begin to have a more convergent view of our shared history there can be no grand reconciliation. Germany and France reconciled after the Second World War precisely because post war leaders of the two countries articulated a shared perception concerning the origins of the war, the ensuing peace and the future shape of Europe. Until similar convergence begins to emerge between India and Pakistan and that may take a long time coming, India will have to settle for managing an adversarial relationship with its neighbour the best it can. This will have to include elements of constrainment, which in plain terms means the ability to inflict pain if India's security is threatened. It must also include a longer-term and uninterrupted project to enhance people to people links, trade and commercial relations and cultural interactions whenever such opportunities offer themselves. Improved relations are likely to be the cumulative outcome of a series of modest and incremental steps rather than a big bang affair.

LoC As International Border?

In this context one is unable to endorse the proposition that India should unilaterally declare the current Line of Control as its international boundary with

Pakistan as was envisaged in the talks between Indira Gandhi and Bhutto in 1971 but abandoned by Pakistan soon thereafter. If the LoC is to become the eventual international boundary between the two countries then it should be the end point of negotiations not the starting point.

An Opening In Afghanistan

Whether we like it or not, India may have no option but to confront Pakistan's renewed attempts, using its Taliban proxies, to establish a dominant presence in Afghanistan, taking advantage of the ongoing ISAF withdrawal. These attempts are already in evidence as the Pakistani Army has emerged from the recent political turmoil in the country and the massacre of Pakistani schoolchildren in the terrorist assault in Peshawar, with greater control over foreign and security policies. The government of Afghan President Ghani has also acquiesced in Pakistan playing a lead role in peace talks with the Taliban. The US and China have endorsed this. Although the revelation that the Taliban leader, Mullah Omar, died two years ago in a Karachi hospital, has once again cast light on Pakistani duplicity, there is no doubt that Pakistan will continue its quest for making Afghanistan a pliant client State. This will be a serious threat to Indian interests and deserves a robust response. The continuing Taliban offensive against the Afghan government has led to Ghani reassessing the value of engaging Pakistan. This could be an opening for India. Short of putting boots on the ground, India should seek to strengthen the Afghan National Army and other security forces through training and supply of hardware. It should be willing to take the lead in enabling coordinated support efforts by regional countries like Iran, Russia, Uzbekistan, Tajikistan and perhaps even China which are as concerned as India is about the re-emergence of a possible terrorist base in the country. The emergence of ISIL not far away from the region and the spread of Sunni fundamentalism adds a dangerous edge to the Afghan crisis.

The WANA Developments

This brings us to recent developments in the West Asia and North African (WANA) region which could have far reaching consequences for the global order and in particular for the Indian subcontinent. There are three zones of concentration of Islamic countries, the WANA including the Gulf, the Central Asian region including the former Soviet republics and South East Asia. Pakistan and Afghanistan get linked to the first and second zones, Bangladesh to the third. And India gets impacted by whatever happens in each of the zones through its contiguity with the zones and its own significant Muslim population.

What happens in the Islamic world has global impact. Islamic countries lie astride the strategic straits and choke points at Malacca, Hormuz, Suez, the Bab al Mandab, the Dardenelles and the Bosphorus. Any conflict among or involving these Islamic States could disrupt critical sea lines of communication. The WANA region and increasingly the Central Asian region contain a significant share of the world's hydrocarbon reserves, 40 per cent of these being in the Gulf region alone. In OPEC only three countries are non-Islamic. One of the WANA countries, Saudi Arabia is also the centre of the Islamic world by virtue of Mecca being located within its borders. Its oil wealth and its status as the theological centre of the Islamic world, imparts an extraordinary influence to the Saudi State and this radiates across all three zones.

The Rise Of ISIL

Today, the WANA zone, which has served as a geopolitical and a geoeconomic pivot, at least since the oil crisis of the early nineteen seventies, is beginning to look like a geopolitical 'shatterbelt' instead. The traditional pillars of regional balance, the states of Egypt, Saudi Arabia, Iraq and Iran are all in the midst of internal political turmoil, sectarian and ethnic conflicts, creating space in the heart of the region for the emergence of a violent and extremist force which threatens to expand its reach far beyond its current though shifting jurisdiction. The Islamic State of Iraq and the Levant (ISIL) which has already declared an Islamic Caliphate over one third of the territory of Iraq and one third of Syria that it controls, is not the typical non-State actor or jihadi movement. It is different in the sense that it has rapidly acquired the attributes of a functioning State, with a governing structure, revenue raising machinery and well-equipped armed forces. It has mobilised a thriving black economy, using the oil assets it has seized from both Iraq and Syria. It is estimated that it is able to raise two million US dollars a day from oil sales, supplemented by extortion, kidnapping for ransom and sale of antiques. It has, therefore, pioneered a form of what one analyst has called 'self-financed terrorism', which may be difficult to stall let alone eradicate. The success of ISIL has attracted Muslim youth from across the world, including from India. The continuing spread of this virus in both Islamic countries and non-Islamic countries which have significant Muslim minorities, such as India, constitutes a new and unfamiliar challenge to which there are no easy answers. It is the proxy war between Sunni Saudi Arabia and Shia Iran which has fanned sectarian conflict and weakened already fragile States held together by authoritarian leaderships. The Arab Spring generated further political strains without delivering the liberal promise that the mass movements conjured up for the people. The US and some of its Western and regional allies in the Gulf, in particular, Turkey and Saudi Arabia, have been guilty of encouraging Sunni fundamentalism in order to isolate Shia Iran. In the process they have been complicit in destroying the only functioning secular States in the region like Syria. In other cases like Libya, intervening to bring about regime change with little thought to its consequences, has spawned violence and unrest far worse than any seen under Gaddafi. The current refugee crisis in Europe is the direct result of failing to take into account the 'morning after' principle before deciding upon external intervention, causing

The success of ISIL constitutes a new and unfamiliar challenge

more harm than good to populations ostensibly being 'protected'.

Plight Of Indian Expats

For India, the dangers of these ominous developments in the WANA are obvious. They can affect the welfare of the six million Indians who live and work in the region. We have had a foretaste of this in the plight of Indian nurses and workers trapped in Mosul and Tikrit in Iraq, after they were occupied by ISIL. We are also heavily dependent on the region for the bulk of our oil supplies and if these are disrupted by prolonged unrest and violence there are no easy alternatives. We may not be able to intervene to influence the course of events in this extended neighbourhood but we need to expand and intensify our political engagement with governments as well as the various informal but influential networks that exist in these countries. Such engagement may prove critical in safeguarding the interests of our citizens resident in the region.

Iran-US Relaxation Of Tensions

In this grim scenario, there is one hopeful development and that is the Iran nuclear deal arrived at after several years of difficult negotiations between Iran and the P-5 plus Germany. This is already altering the geopolitical map of West Asia and the Gulf. Iran's re-emergence as a major energy producer and as an active player in the region, presages a new regional balance in which India may find space for more active engagement. The announcement of a strategic partnership with the UAE during Prime Minister Modi's recent visit to that country, is potentially an important development, which could also impact on India-Pakistan relations.

Diversifying Sources Of Energy

Another foreign policy objective must be to diversify our sources of energy supplies away from WANA towards Africa, Latin America, Russia and South East Asia. Some diversification has taken place but it has been slow and intermittent. The dawn of an extended period of low oil prices is a window of opportunity to better secure our energy security. A long-term energy partnership with Russia has been pursued unsuccessfully for several years but may have become more feasible with the likely shrinkage in Russia's markets to the West. The political fragmentation of WANA and the spread of violent sectarianism is a matter of concern and may have some spillover effects on India. However the inclusiveness and vision of a plural society that lies at the heart of our Constitution and which celebrates the diversity of India is a powerful antidote to the virus of extremism.

The heightened feasibility of an India-Russia energy partnership as a result of a change in Russia's relationship with the West has been mentioned. This change is the other new geopolitical challenge confronting India. Russia's relations with the US have been tense for some time but have now taken on a decidedly adversarial turn. The proximate cause is Ukraine but there are other forces at work. Russia has been held responsible for frustrating US efforts to isolate Iran and to remove Assad from office in Syria. Its decision to give asylum to Snowden, who embarrased the US with his revelations of the National Security Agency's global electronic espionage added to American anger. But there was another factor behind the deliberate encouragement to elements hostile to Russia in Ukraine. The US and some of its European allies were disturbed by the increasingly independent posture adopted by Germany which has emerged as the pre-eminent power at the centre of Europe and which had cultivated a very special relationship with Russia, which is also its major energy partner. Germany is a significant market for Russian gas and also a significant source of capital. The Ukraine crisis discomfited the Russians but it also soured the relationship between Russia and Germany. Thanks to the Ukraine crisis Germany has been successfully tethered back into Europe and NATO at least for the time being.

European Union's Centrality

Germany's pre-eminence has eclipsed the role of the European Union which remains in the throes of a protracted economic crisis with most countries preoccupied with domestic issues. However, India should continue to invest in Europe, which like India is a multi-ethnic, multi-cultural and multi-lingual plural democracy. Each has a stake in the other's success and despite its current troubles, Europe remains a valuable source of capital and technology for India. It is unfortunate that the proposed India-EU free trade and investment agreement continues to remain hostage to a number of nitty-gritty issues, ignoring the bigger picture and the convergences shared by the two sides.

Events in Ukraine have had another major consequence. Russia has moved closer to China, dropping its earlier reserve and inhibition engendered by its anxiety over a resurgent China on its doorstep. This change was dramatically reflected in the Sino-Russian agreement for the supply of Russian gas to China for 30 years, worth US$ 400 billion. As the Western countries pile on more sanctions on Russia, the value of an alternative market in China will increase. These developments are not tactical as some in the West believe. According to one analyst, "The quarter century of Russia's efforts to find an acceptable place for itself in the US led Western system have ended in bitter disappointment. The changing trading patterns point to a new era in Moscow's foreign relations, which will prioritise trading outside the West."

New Geopolitics

In the US-China-Russia triangle it is China that has emerged as the pivot. Which means that the US rebalance to Asia to limit China's strategic expansion has become even less credible than it has already been. The recent slowdown of the Chinese economy does not change the overall trend.

For India these developments have serious implications. The value of the US as the leading component of a countervailing coalition in Asia has diminished. US-Russia tensions will make it more difficult for India to pursue closer relations with both without these being competitive or mutually limiting. In the post-Cold War

era India did not have to make a choice between the two. Both supported India's emergence as a major power. For example, at the Nuclear Suppliers Group, India's case was immeasurably helped by the joint efforts of the US and Russia, which also overcame Chinese opposition. If the NSG were to meet today one doubts whether the US and Russia would be on the same page. Would Russia be more amenable to Chinese calculations?

What is intriguing is that the US made a move which it knew would add to China's strategic heft. Russia may have been irritating but hardly a threat to US and Western interests. China is a different matter.

These developments limit India's strategic space so what is the answer? The emergence of a countervailing coalition in the Asia-Pacific is one part of the response. This includes the consolidation of an India-Japan partnership that will help the second and the third largest powers in Asia to shape the emerging security and economic architecture in this part of Asia. This must go hand in hand with what our Foreign Minister has proposed, that is to 'Act East', beyond just 'Look East'. Australia and South Korea also fall into the definition of this East for India. And even with its diminished pre-eminence the US remains an economic, military and technological powerhouse, whose support and partnership remains indispensable to India's pursuit of its own national agenda.

In the US-China-Russia triangle it is China that has emerged as the pivot

China is the one country which impacts most directly on India's strategic space. The unresolved boundary, the lingering shadow of the Tibet issue, the long standing Chinese support to Pakistan in its hostile posture towards India, these are challenges that we must confront in managing relations with China. Then there is the uncomfortable reality that the asymmetry between our two countries is increasing. China is now four times the size of India in terms of GDP. This makes China an attractive economic opportunity even as its economy slows down and even if there are recurring ups and downs. This imbalance limits India's room for manoeuvre. India's response will need to be subtle and nuanced to determine the precise balance between promoting India-China cooperation in areas of convergent interest, such as was evident in our participation in the BRICS led New Development Bank and constraining its predilection towards the unilateral assertion of power. This must be pursued with the confidence that if there is any country in the world today which has the potential to match and even surpass China in all the indices of comprehensive national power it is India. The actualisation of that potential is what will give India the wherewithal to overcome the changing geopolitical challenges that confront it.

Dynamics Of Climate Change

No survey of the global landscape is complete without focusing attention on another overarching challenge that looms over our planet and that is the threat of global Climate Change. Its impact is already beginning to be felt in the changing patterns of the world's weather, the increased frequency of extreme climatic events and climate related natural disasters, the accelerating melting of the Arctic, Antarctic and Himalayan ice, the thermal expansion and altered chemistry of the world's oceans and the continuing loss of biodiversity. The competitive interstate order that we have lived with since the Westphalian State system came into existence in 1648 in Europe, is singularly incapable of delivering the global and collaborative response that alone could save our world from a possibly irreversible ecological disaster. The consequences of Climate Change will spawn a new and dangerous set of intra and inter-State conflicts over resources, in particular water, energy and food. India has a vested interest in promoting a global Climate Change regime whose underlying principle is solidarity based on equity and which promotes a strategic shift from patterns of development based on carbon based fossil fuels to those based increasingly on renewable and clean energy. This shift is central to India's long-term energy security. Foreign policy in the contemporary world must contend with the reality that, like in the case of Climate Change, there can no longer be fine distinctions between what is domestic and what is external. Nor can it ignore the fact that there are now a growing number of cross-cutting issues which require India to work together with other countries for their resolution because failure to do so would diminish our ability to tackle these issues nationally. These include international terrorism, proliferation of weapons of mass destruction, cross-border criminal activities, public health issues such as we witness today with the Ebola crisis, the safety and security of our space based assets and cyber-crime.

India has a stake in the success of the WTO led rule based multilateral trade and investment regime. The prospect of a transatlantic trading arrangement, the Trans-Atlantic Trade and Investment Partnership, T-TIP, to match the Trans-Pacific Partnership, the TPP, which may soon be emerging, confront India with the prospect of shrinking markets and non-tariff barriers. As India's economy becomes more globalised, the importance of external engagement will increase even more than it is today and our attitude towards the WTO must reflect this reality. It is true that India's future will be determined by how successful it is in tackling its numerous and formidable domestic challenges. However, it is equally true that active and expanded engagement with the world will increasingly be an indispensable ingredient of that success.

Celebrating 6th Anniversary

MILITARY SPACE CAPABILITY OPTIONS AND STRATEGIES

Today, the geopolitical environment has turned in our favour, our strategic footprint has increased, our 'area of interest' has increased and most importantly, our regional responsibilities have also increased. We must therefore leverage our national interest, shared interests and common concerns to open the hitherto locked doors to exploit and put in place a robust and credible 'Military Space Strategy'.

Reaching out, surpassing limits, transgressing boundaries and going where no one has been before are innate human propensities and have spurred multiple means of communications and competition for resources – leading eventually to a clash of interests among nations. While self-preservation, self-interest and to better one's lot are human fundamentals it is the Applied Sciences and Technology that have been the primary tools to achieve those ends. Strangely, science and technology are not always obedient servants but have growth dynamics of their own! It is this factor that has played a major role in determining the destinies of nations and shaping of the world.

Bounties Of Outreach

Maritime power symbolised the outreach and brought victory and riches from afar right up to the 20th century and was a key determinant of national prosperity. It is only in the past 70-80 years, that air power became an increasingly attractive alternative with a greater outreach. In an obvious progression, the boundaries of space and outer space are now being stretched and the bounties beginning to pay back. Exploitation of space and space applications has gradually and unobtrusively, but decidedly, found their way into our daily lives, economic activities and most importantly in military capabilities. As a result of this cross-pollination and what is now termed globalisation, even nations which could have remained insular or had preferred their own pace of growth were influenced and compelled to compete under the rules set by others. The unprecedented advantages that have accrued through the space domain have fired imaginations, led to competition, rivalry and the inevitable clash of interests between nations. 'Space Power' today is the reflection of a nation's technological, military and economic power! India fortunately has made considerable advancement and has great potential in the space domain.

It is quite axiomatic that the fruits of science and technology are always double-edged. Navies protect merchant vessels and destroy hostile ships too; Air Forces deliver supplies and weapon loads too. And similarly, rockets can put into orbit satellites to help humanity and at the same time weaponise space too!

However, any nation which has this dual capability will never disclose or share the offensive capability element with anybody else. Space technologies therefore, are jealously guarded secrets for the advantages they bestow.

National Security Dimensions Of Space

As has been the case in almost all technological pursuits, it were the strategic and military considerations that drove space technologies and the civil spin-offs only emerged thereafter. The three most important aspects which make 'Military Space Capabilities' an inescapable requirement today are:

- The enormous economic benefits that accrue from civil space activities not only make a space-based asset a very valuable national entity, but more importantly it needs to be 'protected'.
- The very same civil space asset or capability also has a huge military use and value in terms of communications, navigation, C4ISR, SAR, Met etc. And these dual capabilities become very significant 'force enhancers' in many military applications.
- Also, it is these military force enhancers that

enable 'strategic reach', regional/global military operations beyond the homeland and expeditionary capabilities both in peace and in war.

The increased use of space for military applications by other nations, especially likely adversaries and a lack of own capability could dramatically tilt the balance in their favour in any future conflict. Given the fact that India has all the resources and endowments it needs to exploit its space capabilities, a large strategic footprint in the region, it's area of interest is expanding and its regional responsibilities and roles are growing by the day – a formidable and declared dual-use space capability will stand us in good stead in the region and globally. The days of perceived sanctions and feared world opinion are over – given India's standing in the comity of Nations today.

The Race And The Protocols

India today is one of the very few countries in the world which has a credible indigenous 'design/build /launch' capability to put satellites into orbit! This is a huge advantage that we have over many other countries and there is no need for us to be squeamish in demonstrating this capability for dual-use space exploitation. There are however, the contentious issues of 'militarisation' and 'weaponisation' of space and of course, the extant international treaties and agreements. However, with regard to the protection of civil space assets, the protection mechanisms, parameters and strategy would essentially be a military function and will therefore have to be conceptualised, planned and executed by the military. On the other aspects of 'military force enhancement' and 'defensive counter-space' measures, it could be debated whether the military's utilisation of a space-based asset would tantamount to its 'militarisation'. If the answer is 'yes' then surely, even the railways and airlines are militarised! Prudence dictates that only when 'offensive counter-space' missions are executed will it 'militarise' space and only when weapons are placed in space will 'weaponisation' of space happen! Interestingly, the Outer Space Treaty of 1967 only prevents placing of WMDs in space – NOT any weapon. The Treaty does NOT prohibit even nuclear-tipped ICBMs transiting through outer space! Since we only have to follow the leaders in the space race, we will do well to remember that these advanced nations who had spearheaded the space race and were instrumental in drafting the 1967 Treaty, had already factored in their futuristic requirements! As more nations come into the fray and develop or acquire credible space technologies and if the gloves come off on some of the outer space treaties, the super powers will most certainly stretch the 'Protocols'!

Space technologies are jealously guarded secrets for the advantages they bestow

Air, Aerospace And Space

There are, in essence, significant doctrinal similarities between 'air', 'aerospace' and 'space' – long reach, flexibility of response, out-of-area operations, over-the-rim vision and many more. The logical progression therefore of modern air, maritime power is to evolve into a credible Space Power too. While all three elements of military power considerably enhance their capabilities by the integration of space-based assets, it is Aerospace Power that benefits the most. Every new capability requires residing in an appropriate 'parent capability' or organisation as it finds patronage and utility with many others. Air or Aerospace Power is the closest such capability and the Air Force the closest organisation to host, nurture and exploit 'Military Space' capabilities – this approach has been followed by most nations that have a credible 'Military Space' capability and it would be wise to follow suit and make the IAF the lead Service in the proposed Military Space Command. Whichever shape or form this Command takes eventually, our national and military leaders need to ensure that India's military space capabilities ensure protection of our space-based assets presently and if our national security imperatives so warrant – to weaponise space as and when required!

Air Chief Marshal Fali Homi Major PVSM, AVSM, SC, VM (Retd)

Today, the geopolitical environment has turned in our favour, our strategic footprint has increased, our 'area of interest' has increased and most importantly, our regional responsibilities have also increased. We must therefore leverage our national interest, shared interests and common concerns to open the hitherto locked doors to exploit and put in place a robust and credible 'Military Space Strategy'.

Options And Strategies

India fortunately has made great strides in the space domain and the whole world recognises and applauds the progress made in a variety of space endeavours. While we have almost mastered the art of design/build/launch capabilities in civil space pursuits, the military aspects have not received the attention that they require – perhaps due to political reasons or in deference to possible sanctions. Today, the geopolitical environment has turned in our favour, our strategic footprint has increased, our 'area of interest' has increased and most importantly, our regional responsibilities have also increased. We must therefore leverage our national interest, shared interests and common concerns to open the hitherto locked doors to exploit and put in place a robust and credible 'Military Space Strategy'.

As space permeates the military further and as it assumes greater strategic import, the Services must participate much more than what they do presently and be trained to shoulder a greater role and responsibility in India's space missions. Stretching the point further, we need to remind ourselves that it is getting crowded up there in space and if we don't make our presence felt it might be too late! DSA

Celebrating 6th Anniversary

INDIAN INDUSTRY
RISK AVERSE OR CONFUSED?

While the government is averse to a single vendor situation, the industry is very apprehensive of the single customer situation. To avoid this situation, the Manohar Parrikar leadership is aspiring to put in place a procedure that will create partners, involve the larger industry in defence manufacturing, speed up processes, make available test facilities to the industry, create an enabling mechanism and a facilitating mechanism for the industry to interface with the government, all of which are essential for growth.

The figures are both staggering and disturbing. According to a Ministry of Defence (MoD) estimate, India is likely to spend nearly 130 billion dollars in buying arms and equipment over the next five to seven years. That makes on an average 20 to 25 billion dollars a year to be spent on capital acquisition alone, a mammoth figure by any standard.

The distressing fact however is this: Almost 90 per cent of this money is likely to be pocketed by foreign defence manufacturers since India's defence industrial base has remained anaemic thanks to a mix of faulty procurement policies of the government and the tendency to protect Defence Public Sector Undertakings (DPSUs), relics from India's socialist past, from competition.

However, as a declared nuclear power, located in one of the world's most unstable regions, India can hardly afford to be dependent on imported weaponry if it wants to be taken seriously in the emerging world order.

National Power Variables

But how does one change the current trend? Does India have the defence industrial base to make the paradigm shift? Can India ever become self-reliant in its defence needs? Is the domestic industry not coming up to the expectations of the national requirement? These questions have no clear or easy answers but perhaps India's defence sector can both become self-reliant and self-sufficient if it can align with the Narendra Modi government's new initiative, 'Make in India' in the coming decade.

Admittedly, the level, quality and quantity of the weapon systems sought by a nation for its armed forces are a very subjective and debatable issue. There are numerous issues which go into creating this vision. These could be national aspirations based on majority opinion or leadership of the nation, perceived threats to its sovereign integrity, political ideology, demographic size, geographical location, economic power and state of its local industrial base.

The process of identifying weapons requirements thereafter is not an easy task either. The vision document for weapons acquisition starts with validated assumptions on strategic requirements. A realistic requirement generation process must necessarily be

driven and dominated by demand-pull rather than by technology-push approach. The convergence of three Ts – threat perceptions, tactics and technology application – is an important factor in planning the profile of armaments acquisition.

Way back in 1948, taking note of the weak economy and near total absence of sophisticated technological capabilities, Prof PMS Blackett had recommended that India should develop strategic and tactical military doctrines that would enable her to manage defence adequately with indigenous (less advanced) weapons, even while advocating a gradual and long-term plan to achieve self-reliance in weapons, including strenuous efforts to create world-class technological capabilities.

So are 'self-reliance' and 'self-sufficiency' two sides of the same coin? Not if the ultimate aim is to develop capabilities for design and manufacture of indigenous weapon systems. 'Self-sufficiency' means in-house production of everything needed by the armed forces and should be the ultimate objective to strive for, while 'self-reliance' is a more pragmatic approach because it means equipping the armed forces with a whole range of equipment which may come from foreign or domestic sources. But if the objective is more than just minimising imports, then it is a positive concept of promoting and enabling the national research, development and manufacturing sectors to fulfill their strategic mandate which states that the nation of India's size, resources and potential does not have to look elsewhere for major weapons and defence systems for want of technical capabilities.

Modi Initiatives

Since May 2014, the Narendra Modi Government has taken at least three measures that have a direct bearing

on defence manufacturing in the country. A list of defence items requiring industrial license was notified in June 2014; a security manual for licensed defence industries was also notified the same month and two months later the Foreign Direct Investment (FDI) limit for the defence sector was increased to 49 per cent with a provision that even higher FDI could be permitted if it provided access to state-of-the-art technology.

While the 'Make in India' concept is an echo of MoD's long-cherished aspiration for self-reliance in defence production, the Defence Ministry has failed to follow its own guidelines articulated in the Defence Production Policy of January 2011. One of the provisions in that policy says the *Raksha Mantri* will hold an annual review of the progress made during the year in self-reliance. We do not however know in public domain if such a review was ever carried out.

Manohar Parrikar led Defence Ministry has initiated several reforms to streamline processes, improve the efficacy of the Defence Procurement Procedures, streamline exports from the Defence Sector while providing higher direction to the Armed Forces. Top down approach with the minister leading from the front, with active involvement in each of the initiatives, has breathed life into a ministry that was infamously known to have been sluggish, lethargic and non-responsive, with consequent delays in procurement of Defence materiel for the Armed Forces.

Frameworked Review

A review of the needs of the armed forces, categorising them into urgent, immediate and necessary could be a start. The next step should be to begin consultations far and wide. In fact the 'Make in India' *mantra* also seeks attitudinal change to India's policy-making processes – namely, fostering a culture of trust between government and industry/business stakeholders. It may therefore be a good idea to dovetail the DPP into 'Make in India' by initiating a culture of dialogue and consultations on the defence acquisition process itself. If handled properly, this dialogue could go a long way in building enhanced confidence and trust in MoD's procurement systems.

It is not that the MoD has not undertaken consultations in the past. For instance, the current 'Make' procedures were based on recommendations of an inter-disciplinary group closely involving the Indian defence industry and more recent changes relating to indigenous content determination and for streamlining of 'Buy and Make (Indian)' category of defence acquisitions relied extensively on industry consultations for fine-tuning the initial drafts.

However, a decade down the line, not a single project, under 'Make' category, has been conceived so far. Before the 'Make in India' concept can be synchronised with 'Buy' and 'Make' (Indian) procedure that exists in the DPP, some issues need to be resolved. They are: (a) Can design and development projects be subjected to rigorous procedures? (b) Is the key to all such 'make' projects under Category A, of indigenous design only? Or are we satisfied with foreign design, with their control remaining outside of the country?

The Dhirendra Singh Committee has made some very bold recommendations in terms of creating an attitudinal shift, towards the procurement process. At a strategic level, the Committee of Experts (of which the writer has been a part), recommends that the nature of Defence materiel is so unique that it may not be subjected to the same very mundane evaluations as is applicable to the civil purchases.

Liberalised Offsets Policy

Defence is procurement, while civil is a purchase and therein lies the distinction. The rigorous process of formulation of the RFP, technical evaluations, detailed examination of performance to stated parameters during extensive trials in varied terrain and fine-comb staff evaluation are the points of distinction that sets apart one from the other. Dhirendra Singh has also addressed aspects of sluggishness in the procurement process, in his extensive 265 page report and made some recommendations thereof. Defence sector is viewed as the front runner in the Narendra Modi's vision of 'Make in India' and here the proposals have been for the MoD to deal with partners rather than vendors, a mind shift again. Therefore the concept of strategic partners and development partners who could be given a preferential treatment in procurement through a single source if required. Recognising the primacy of the political establishment, the report recommends that the balance of advantage shift to the Armed Forces in decision-making. The report is appreciated for the suggestions put forth in easing the process involved in offsets contracting. A liberalised offsets policy is key to engagement of the larger industry in international contracting and exposing them to challenging markets.

Where Is Indian Industry In This Melee?

The 1956 industrial policy actually vindicated the legacy left behind by the British. Quoting from the report of the Experts Committee, "Unfortunately, the industrial policy of 1956 unwittingly strengthened this position. The remnants of the policy to a very large extent still haunt us, as state-of-the-art equipment continues to be imported with only repair and maintenance facilities being established in the country". The 1991 industrial policy which was transformational in many respects did not alter the position in the Defence sector, continuing to maintain the dependence on public sector. It was however in 2001 that the private sector was allowed to join this exclusive Defence manufacturing club with many restrictions, however as pointed out earlier in this article, the present political dispensation has made

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significant changes to encourage private sector participation. The resilience inherent in the private sector has made them learn the game fast and have in a span of two decades, matured to become system integrators. While the public sector in Defence Production have been sitting on huge cash reserves, the private sector being risk-friendly have made investments in the sector, are already part of the global supply chain, have absorbed technology and skills to become relevant in Defence Production. A number of Joint Ventures have been formed and more are in the pipeline, with the government of the day creating an environment of investment, hope and business.

A list of Foreign Investments approved for Indian companies in this sector is given below:

1	*M/s Multirole Transport Aircraft Ltd*	*Co-development and Co-production of a Multirole Transport Aircraft of 15-20 Ton category jointly with Russian partners.*
2	*M/s HAL-Edgewood Technologies Limited*	*Development and Manufacture of high technology miniature electronic modules and avionic systems for aerospace applications.*
3	*M/s HALBIT Avionics Private Limited*	*Products such as Aircraft Simulators and Services and to subsequently enhance the scope of products to airborne avionics products. Development of state-of-the-art technology.*
4	*M/s Bharat Electronics Ltd*	*Design, development, marketing, supply and support of civilian and select defence Radars for Indian and global markets.*
5	*M/s Alpha-ITL Electro Optics Private Limited*	*Manufacture of optical goods and equipment and optical instruments*
6	*M/s HBL Elta Avionics Systems Private Limited*	*Radar, EW Systems, Electronics Communication systems.*
7	*M/s BF Systems Limited*	*To provide complete support for Lightweight Howitzer and other small and medium calibre weapons programmes, inclusive of engineering design and development, manufacturing services and upgrading.*
8	*M/s Alpha Electronica Defence Systems Pvt Ltd*	*Production, assembling, testing, repair and support for EW equipment and systems for land/shipbased/airbased platforms.*
9	*M/s Armet Armored Vehicles (India) Ltd*	*Manufacture of bodies (including Cabs) designed to be mounted on motor vehicles chassis for special purpose motor lorries, armoured cars etc.*
10	*M/s Samtel Thales Avionics Pvt Ltd, New Delhi*	*Development, manufacture and selling of helmet mounted sight display.*
11	*M/s Astra Microwave Products Ltd, Hyderabad*	*Design, development, manufacture and supply of components and sub-systems for wireless communication for application in defence, space and cellular communication.*
12	*BrahMos Aerospace*	*Joint venture company, between the Defence Research and Development Organisation (DRDO) of India and NPO Mashinostroyenia of Russia has been formed for design, development, production of a Supersonic Cruise Missile.*
13	*M/s Mahindra Defence Systems Ltd, New Delhi*	*Manufacture and marketing of defence equipment in the land sector.*
14	*M/s Taneja Aerospace & Aviation Limited*	*(i) Armour panel for helicopter, (ii) Body armour.*

15	*M/s Vyoneesh Technologies Pvt Ltd, New Delhi*	*Manufacturing, Designing, Selling, Undertaking Overhauling and Maintenance Activities for all kind of Engg And Technology Related Equipment and Products including Aircraft.*
16	*M/s ICOMM Tele Ltd, Hyderabad*	*Engaged in engineering, procurement and construction services in the telecommunication, power transmission and distribution, water and sewerage sectors, manufactures telecommunications and power transmission towers, research, development and manufacture of active telecommunications infrastructure and equipment for a variety of sectors including defence related telecommunications equipment.*
17	*M/s Lakshmi Machine Works Limited, Coimbatore*	*Manufacturing of entire range of Textile Spinning machinery. Proposed additional activities: manufacturing of parts, components and accessories for aircraft and spacecraft to be supplied to civil and defence sector.*
18	*M/s Tata Aerostructure Limited, Mumbai*	*Design, manufacture, supply procurement and life cycle support of advanced aerospace and aero structures items for defence aircraft, helicopters and unmanned airborne vehicles including empennages and centre wing boxes (NIC Code- 377.8).*
19	*M/s Larsen & Toubro Ltd, Mumbai*	*Manufacturing, distributing and marketing of products in the market segments of electronic warfare, military avionics, mobile systems (defence related) and radars (NIC code 359.4).*
20	*M/s ABG Shipyard Ltd, Mumbai*	*Existing Activities: Shipbuilding, ship repair (NIC Code: 3899 and 3402) Proposed Activities: Defence products: NIC Code: 370, 359, 359.4, 365, 366, 367 and 370.8.*
21	*M/s Jubilant Aeronautics Pvt Ltd, Delhi*	*Manufacture of different types of Unmanned Aerial Systems and accessories (NIC Code: 3770).*
22	*M/s Maini Precision Products Pvt Ltd*	*Existing activities: Engaged in the business of manufacture and export of high precision parts for automotive, material handling, general engineering purposes. Proposed additional activities: To manufacture parts and accessories of aircraft and spacecrafts (NIC Code: 377.8).*
23	*M/s Park Controls & Communications Ltd, Bangalore*	*Engaged in the business of defence Avionics solution provider. Proposed addition to activities: To manufacture onboard/data acquisitions systems, avionics, timing products, time code readers, ground based telemetry systems and other electronic aerospace and defence equipment.*
24	*M/s Rossell Aviation Private Ltd*	*To engage in civil and defence aviation field with focus on product support services, repair and maintenance facility, providing training solutions in project.*
25	*M/s Indian Rotorcraft Ltd*	*To engage in the business of undertaking final assembly of both military and civil versions of AgustaWestland AW119Kx Helicopters.*
26	*M/s Tara Aerospace Systems Ltd, Mumbai*	*Manufacture of parts for civilian aircraft. Proposed: Design, development, engineering, manufacturing, integration, assembly, testing and inspection and fixed-wing aircraft, including products such as aerospace and aero-structure components, kits and accessories in the defence sector.*
27	*M/s Larsen & Toubro Ltd, Mumbai*	*Defence Production.*
28	*M/s Space Era Materials and Processes Pvt Ltd*	*Engaged in the business of design, development, manufacture, assembly, repair and overhaul of the equipment of telecommunication and avionics used in aircraft, radars and other electrical and electronics defence components, aggregates and equipment in India*

29	*M/s Track Systems India Private Limited*	*Manufacturing, assembling, marketing, trading, dealing in import and export of tracks and parts thereof and running gear components required for the defence sector.*
30	*M/s Amertec Systems Pvt Ltd*	*Manufacturing of advanced electronic systems, test systems, simulators and electronic systems for military applications.*
31	*M/s Hical Technologies Pvt Ltd*	*Manufacture of wiring, cable and harness for aeronautics and defence sectors (civil and military) and test benches.*
32	*M/s BF Elbit Advanced Systems Pvt Ltd*	*Manufacture of Artillery Guns/Howitzers, Mortars, Ammunition, manufacture of Tactically protected vehicles.*
33	*M/s SasMos Het Technologies Limited*	*Existing: Assembly/Manufacturing of Cable Assembly, interconnection systems, Electrical and Electronic Panels for Aerospace and Defence applications. Proposed: Manufacturing of Electronic Warfare Sub-systems, Automatic Test Equipment, Avionics and Radar Sub-Systems, Unmanned Vehicle Sub- Systems, Command and Control Systems and Navigational Sub-systems and related parts and accessories for Airborne, Ground and Naval application in addition to existing activities.*
34	*M/s Quest Global Manufacturing Private Ltd*	*Manufacturing for Indian Defence Sector including defence aerospace and participate in offset programme.*
35	*M/s ideaForge Technology Pvt Ltd*	*Existing Manufacturer of Unmanned Aerial vehicles for supplies to Defence Sector.*

This has happened in the last one year, while the investments in Defence sector have been an abysmally low US$ 1.31 million in the last three years and only a feeble US$ 4.8 million since independence. Is the private industry risk averse?

Private Sector Examples

With an existing order book of US$ 1.6 billion Tata Sons have indicated a huge investment in the Defence sector in the coming decade, to the tune of a few billion dollars. Larsen & Toubro (shipbuilding), has been shortlisted for six submarines and is eyeing export markets of Thailand, Indonesia, Myanmar, Sri Lanka and eastern Africa. Primary platforms are littoral vessels and surface warfare craft. The submarine order book is estimated to be about 1 trillion US$, they are looking at an investment of US$ 400 million. The Mahindra Group has been aggressive in acquiring through their components sector (known internally as the Systech sector), several companies with design and manufacturing experience. The combination of their acquired experience with our existing technological capabilities has come to fruition rapidly; completed aircraft are already flying in the Middle East and Australia. They directly supply the assembly lines of the Boeing *737*, Gulfstream *G150* and the world's most advanced fighter aircraft, the Lockheed Martin *F-35* Joint Strike Fighter.

Bharat Forge has always dominated the automotive components market both domestically and globally. The Aerospace business unit is a leading supplier of various components – airframe, structural and engine parts for the aviation sector. The marine business unit supplies various products to global shipbuilders, including key products like crankshafts, connecting rods and propeller shafts. They have already displayed a 155 mm artillery gun, ready for induction.

Taneja Aerospace, a vertically integrated aerospace company is planning an investment of about 60 million US$. Munjal Group, Reliance Aeroventures, Quest Global, Tata Advanced Systems, the Adanis and Ambanis and so many others are lining up for investment in the Defence sector.

While the big boys are ready with their plans and have also acquired land and infrastructure, there are a number of small companies who have made huge investments and with an encouraging climate are prepared to make more. Some noteworthy names are Alpha Design Technologies, Bangalore, with its four JVs and building the company with a powerful combination of organic and inorganic growth, is preparing for an investment of more than INR 400 crore. The company has already captured the domestic and global market in nearly equal proportions. Accord Software and Systems Limited, a company that excels in design services and builds to specifications, has a 360 degree coverage with some of its high technology components flying in the *Chandrayaan* and *Mangalyaan* spacecraft and host of other aircraft in India and across the globe. Accord sets to invest more than INR 50 crore in the next one year. Rambal Limited, an automotive component manufacturer based out of Thiruppourur, Chennai, has called for a teaming arrangement with General Kinetics, Canada for active suspensions,

Large projects need early fructification, bureaucratic lethargy must be arrested

while reading between the lines, the requirements for Armoured Fighting Vehicles. VEM Technologies, an SME a decade ago, is planning to invest INR 600 crore in Andhra Pradesh, to become the missile integrator in the country, they already supply a majority of the sub-systems required in any missile and associated discplines. SLN Technologies, an SME, is looking for foreign partners for tie-ups and prepared to invest up to INR 50 crore in the short term.

What Does All This Indicate?

The examples given here are only a representative fraction of the total investment that is likely to come in the short-term. One encouraging sign from all of the above is that the DPSUs (Defence Public Sector Undertakings), have also learnt from the private sector a lesson or two in cash flow and are preparing for huge investments, with larger outsourcing and hand-holding of the private industry. The MSMEs have huge hopes from the DPSUs and the large private industry. Baba Kalyani, has himself stated that the private sector can outsource up to more than 60 per cent to the MSMEs and is already leading by example. Kalyani Group and Rafael Advanced Defense Systems Ltd recently announced the formation of a Joint Venture Company in India (51:49). The initiative is in line with the 'Make in India' policy of the Government and will enable the development and production of high-end technology systems within the country. This will include a wide range of technologies and systems, like missile technology, remote weapon systems and advanced armour solutions.

Joint Ventures Are The Way To Go

An indicative list of JVs in the Defence sector is placed at table below:

S No	Regn No and Date	Name of the JV /Implementing Company	Details of Partner/s (along with share in JV)	Items to be manufactured
1	1 25 Feb, 2005	M/s Alpha-ITL Electro Optics Private Limited	M/s Alpha Design Technologies Private Limited – 74% ITL Electro Optics Pvt Ltd – 26%	Manufacture of optical goods and equipment and optical instruments.
2	79 14 Jun, 2007	M/s HBL Elta Avionics Systems Private Limited	M/s HBL Power Systems Ltd 74% M/s IAI Elta Systems Limited, Israel – 26%	Radar, EW Systems, Electronics Communication systems.
3	77 14. 3. 2007	M/s BF Systems Limited	M/s BF Utilities Ltd – 74% M/s Singapore Technologies Kinetic, Singapore – 26%	To provide complete support for Lightweight Howitzer and other small and medium calibre weapons programmes, inclusive of engineering, design and development, manufacturing services and upgrading.
4	388 27. 12. 2007	M/s Alpha Electronica Defence Systems Pvt Ltd	M/s Alpha Design Technologies Pvt Ltd, Bangalore – 74% M/s Electronica SPA, Italy – 26%	Production, assembling, testing, repair and support for EW equipment and systems for land/shipbased/airbased platforms.
5	Press Release Dt 31. 10. 08	M/s Armet Armored Vehicles (India) Ltd	M/s Armet Armored Vehicles (India) Ltd – 75% M/s Armet Armored Vehicles London – 25%	Manufacture of bodies (including Cabs) designed to be mounted on motor vehicles chassis for special purpose motor lorries, armoured cars etc.
6	121 (2009)/323 (2008) Dt 15 April, 2009	M/s Samtel Thales Avionics Pvt Ltd, New Delhi	M/s Samtel Display Systems Ltd, New Delhi – 74% M/s Thales Avionics SA, France M/s Thales International(India) Pvt Ltd, New Delhi – 26%	Development, Manufacture and selling of helmet mounted sight display.

7	261 18 Sept, 2007	M/s Astra Microwave Products Ltd, Hyderabad	M/s Astra Microwave Products Ltd, Hyderabad – 77.19% M/s Strategic Ventures Fund Ltd, Mauritius – 22.81% M/s Frontline Startegy Ltd, Mauritius	Design, development, manufacture and supply of components and sub-systems for wireless communication for application in defence, space and cellular communication.
8	106 21 April, 2008	M/s Mahindra Defence systems Ltd, New Delhi	M/s Mahindra & Mahindra Ltd – 74% M/s BAe Systems Pic, England – 26%	Manufacture and marketing of defence equipment in the land sector.
9	65 24 Feb, 2009	M/s Taneja Aerospace & Aviation Limited	M/s Taneja Aerospace & Aviation Ltd, Hyderabad – 83.93% M/s Citigroup Global Markets Pvt Ltd and Others, Mauritius – 16.07%	(I) Armour panel for helicopter, (ii) Body armour.
10	150 08 July, 2009	M/s Vyoneesh - Rosebank Technologies Pvt Ltd, New Delhi	M/s Vyoneesh Technologies Pvt Ltd, New Delhi – 74% M/s Rosebank Engineering Pvt Ltd, Australia – 26%	Manufacturing, Designing Selling, Undertaking Overhauling and Maintenance Activities for all kind of Engg and Technology Related Equipment and Products including Aircraft.
11	116 01.06.2010	M/s ICOMM Tele Ltd, Hyderabad	M/s Tano Mauritius India FVCI Existing 5.1%; Increase upto 26%	Engaged in engineering, procurement and construction services in the telecommunication, power transmission and distribution, water and sewerage sectors, manufactures telecommunications and power transmission towers, research, development and manufacture of active telecommunications infrastructure and equipment for a variety of sectors including defence related telecommunications equipment.
12	73 31.03.2010	M/s Lakshmi Machine Works Limited, Coimbatore	M/s Rieter Machine Works Limited, Switzerland – 3.48%	Manufacturing of entire range of Textile Spinning machinery. Proposed additional activities: manufacturing of parts, components and accessories for aircraft and spacecraft to be supplied to civil and defence sector.
13	135/2010 Dt 20.12.2010	M/s Tata Aerostructure Limited, Mumbai	M/s Lockheed Martin Aeroframe Corporation, USA – 26% M/s Tata Advanced Systems, Delhi – 74%	Design, manufacture, supply procurement and life cycle support of advanced aerospace and aero-structures items for defence aircraft, helicopters and unmanned airborne vehicles including empennages and centre wing boxes (NIC Code-377.8).

14	211/2010 Dt 18. 10. 2010	M/s Larsen & Toubro Ltd, Mumbai	M/s EADS Deutschland GmbH, Germany – 26%	Manufacturing, distributing and marketing of products in the market segments of electronic warfare, military avionics, mobile systems (defence related) and radars (NIC code 359.4).
15	121/2010 Dt 08. 06. 2010	M/s ABG Shipyard Ltd, Mumbai	FIIs, Foreign Investors, NRIs Existing: 21.91%	Existing Activities: Shipbuilding, ship repair (NIC Code: 3899 & 3402); Proposed Activities: Defence products: NIC Code: 370, 359, 359.4, 365, 366, 367 and 370.8.
16	182/2010 Dt 15. 09. 2010	M/s Jubilant Aeronautics Pvt Ltd, Delhi	M/s Aeronautics Ltd, Israel – 26% M/s Jubilant Aeronautics Pvt Ltd, Delhi – 74%	Manufacture of different types of Unmanned Aerial Systems and accessories (NIC Code: 3770).
17	224/2010 " Dt 12.11. 2010	M/s Maini Precision Products Pvt Ltd	M/s Ambadevi Mauritius Holding Ltd, Mauritius – 25.93	Existing activities: Engaged in the business of manufacture and export of high precision parts for automotive, material handling, general engineering purposes. Proposed additional activities: To manufacture parts and accessories of aircraft and space crafts (NIC Code: 377.8).
18	45(2011)/176 (2010) Dt 9. 6. 2011	M/s Park Controls & Communications Ltd, Bangalore	NRI – 7%	Existing Activities: Engaged in the business of defence Avionics solution provider. Proposed addition activities: activities to manufacture of onboard/data acquisitions systems, avionics, timing products, time code readers, ground based telemetry systems and other electronic aerospace and defence equipment.
19	16(2012)/198 (2011) Dt 28. 3. 2012	M/s Rossell Aviation Private Ltd	M/s CAE International Holdings Limited, Canada – 26%	Proposed Activities: To engage in civil and defence aviation filed with focus on product support services, repair and maintenance facility, providing training solutions in project.
20	104(2012)/07 (2012) Dt 8.11.2012	M/s Tara Aerospace Systems Ltd, Mumbai (M/s Tara Advanced Systems Ltd)	M/s United Technologies International Corporation Asia Pvt Ltd, Singapore [There is no foreign investment involved in the proposal, approval is for additional activities in the defence sector]	Existing: Manufacture of parts for civilian aircraft. Proposed: Design, development, engineering, manufacturing, integration, assembly, testing and inspection and fixed-wing aircraft, including products such as aerospace and aero-structures components, kits and accessories in the defence sector.
21	100(2012)/190 (2012) Dt 8.11. 2012	M/s Larsen & Toubro Ltd, Mumbai	FIIs: 13.84% Shares underlying GDR: 3.17% Others (NRIs, Foreign Nationals): 0.94% Total 17.95 % Ex post-facto approval	Defence Production.

22	117(2012)/116 (2012) Dt 28.12. 2012	M/s Space Era Materials and Processes Pvt Ltd	M/s SLA United Technologies and Production Investments, Latvia – 26%	Engaged in the business of design, development manufacture, assembly, repair and overhaul of the equipment of telecommunication and avionics used in aircraft, radars and other electrical and electronics defence components, aggregates and equipment in India.
23	63(2012)/20 (2012)	M/s Track Systems India Private Limited	M/s DIEHL Defence Land Systems GmbH, Germany – 26%	Manufacturing, assembling, marketing, trading, dealing in, import and export of tracks and parts thereof and running gear components required for the defence sector.
24	16(2013/186 (2012)) Dt 10. 4. 2013	M/s Bharat Electronics Ltd	M/s Thales France through M/s Thales Air Systems SAS (5%) and M/s Thales India Pvt Ltd (21%) Total: 25%	Design, Development marketing, supply and support of civilian and select defence Radars for Indian and global markets.
25	27(2013/38 (2012)) Dt 14. 5. 2013	M/s Amertec Systems Pvt Ltd	M/s Enertec Electronics Ltd, Israel, 26%	Manufacturing of advanced electronic systems, test systems, simulators and electronic systems for military applications.
26	31(2013/229 (2012) Dt 6. 6. 2013	M/s Hical Technologies Pvt Ltd	M/s NSE Industries, France, 26%	Manufacture of wiring, cable and harness for aeronautics and defence sectors (civil and military) and test benches.

A number of JVs are in the pipeline at various stages of conception and implementation. It is only a question of time when all of these will fructify.

Positive News From Foreign Industry

Tata Sikorsky Aerospace Ltd will invest INR 21.5 crore in its unit to manufacture helicopter cabin kits and parts. State Government approves project under the single window policy launched in June 2015. Dynamatic Technologies Limited has signed a global outline agreement with BELL Helicopter and Textron Systems, which establishes it as a single source supplier of major airframe assemblies for the BELL 407GX and 407GT. Boeing and Tata Advanced Systems Limited (TASL) signed a framework agreement to collaborate in aerospace and defence manufacturing and potential integrated systems development opportunities, including unmanned aerial vehicles. The companies intend to access markets jointly for products and platforms developed together by Boeing and TASL. Bombardier has received a new order for 162 MOVIA vehicles for New Delhi Metro worth around US$ 1.2 billion of rolling stock and signalling contracts. These additional trains will be delivered from state-of-the-art manufacturing sites in Vadodara that are equipped to support metro rail operations across India. Hyundai Heavy Industries (HHI) will work with Hindustan Shipyard Limited, Vizag to build warships in India. Airbus has made an announcement to join the 'Make in India' bandwagon. To this extent, Airbus has already announced restructuring of its organisation in India and has announced that Airbus exports will reach US$ 2 billion from India. Airbus Helicopters and Mahindra Defence, a Mahindra Group subsidiary, have also announced a plan to produce helicopters to cater to India's military requirements. Pratt & Whitney, has also evinced interest in setting up its facilities in India. Like in the automobile sector, aviation also has the potential to create many upstream and downstream jobs along the supply chain. In this regard, the company has already announced the groundbreaking of its customer training centre in Hyderabad. It will train aircraft engineers and technicians of Pratt & Whitney's customers on current and new engine models. This Pratt & Whitney training centre will be the third such facility in the world. LH Aviation has signed an MoU with Indian OIS Advanced Technologies for the manufacturing of tactical drones in India. The companies will collaborate for setting up a manufacturing plant through an industrial license. This will allow a hundred drones intended for the Indian market to be produced locally. The LH-D is a multi-sensor tactical UAV (unmanned aerial vehicle) with automatic take-off and landing capabilities. UAVs are generally used for military or non-military security missions. The MoU has been signed for drones with a payload of 280 kg with autonomy of 24 hours. These drones run at a speed of 61-185 knots and can be deployed quickly as they

have removable wings. They can also be sent into any field of operation and be ready in less than one hour. Pipavav Defence led by Anil Ambani, has entered into a partnership with Russia to build warships. In addition, the group is seeking to develop India's first Smart City for the defence sector at an estimated cost if US$ 1 billion. Mihan near Nagpur has been chosen as the site for this city and would be called Dhirubhai Ambani Aerospace Park. The park would have manufacturing facilities to produce helicopters both for commercial and military purposes. It has been widely reported that the Russian government has selected Reliance Defence and Aerospace (RDA), for a joint venture to manufacturing almost 200 Kamov *226T* helicopters in India. In addition, the company has also committed to invest US$ 1.7 billion (₹ 10,000 crore) to fund initiatives across the cloud, digital and telecom space.

P3 Voith, a German conglomerate with billions of dollars revenue, is making rapid progress in establishing manufacturing and services facilities in India. They are actively present in the engineering services domain as well as in the manufacturing domain, they have the unique expertise to enable manufacturing through their services division.

Is the Industry risk averse? Well, the answer lies in the statistics provided above.

Is The Industry Confused?

At a time when the demand was high, the industry was restricted to the government owned companies and now that this has opened up, the demand has to sustain these companies. One aspect of the topic is certain, the industry is not risk averse. Foreign industry as well have shown a golden hand, it is a now or never situation. With a positive and responsive political leadership, investments will happen, sooner than later, the flow has begun, floodgates are being prepared for the opening.

While the government is averse to a single vendor situation, the industry is very apprehensive of the single customer situation. There is only one customer and he dictates the game, you cannot afford to antagonise him, well business is more important. Therefore, the confusion that has been prevailing for a few decades has only got confounded. More investments, more industries participating, larger defence industrial base, more number of MSMEs and possibly more disappointments?

To avoid this situation, the Manohar Parrikar leadership is aspiring to put in place a procedure that will create partners, involve the larger industry in defence manufacturing, speed up processes, make available test facilities to the industry, create an enabling mechanism and a facilitating mechanism for the industry to interface with the government, all of which are essential for growth. Focused on growth, the Defence Minister is taking all possible steps to ease regulatory controls, especially in exports. This will allow global access to defence products with much more ease than ever before. Large projects need early fructification, bureaucratic lethargy must be arrested and procurements be put on fast track. The very idea of introducing a fast track procedure is indicative of the fact that the normal process is likely to be agonisingly slow. This myth needs to be corrected and corrected early. Exports are the way to go and exploring export markets with ease will help Indian industry to become profitable and attractive.

A number of SMEs are already making investments

Role of DRDO in 'Make in India'

DRDO being the technical arm of the Ministry of Defence needs to proliferate technologies to the industry with such ease that it allows them to flourish in this difficult and challenging space. The DRDO-FICCI ATAC (Accelerated Technology Assessment and Commercialisation) programme creates a commercial pathway to deliver technologies developed by DRDO for appropriate commercial markets for use in civilian products and services. This programme is first of its kind to be undertaken by DRDO in association with FICCI to actively spinout several of DRDO's technologies for appropriate commercial markets both nationally and internationally. In the very first year of the FICCI ATAC programme as many as 26 DRDO labs across India are participating and over 200 technologies are being assessed under this programme by FICCI. The technologies that are currently assessed are from sectors as diverse as electronics, robotics, advanced computing and simulation, Avionics, optronics, precision engineering, special materials, engineering systems, instrumentation, acoustic technologies, life sciences, disaster management technologies, information systems etc. Amongst these the Bio-Digester technology has become more popular, thanks to the vision of the hon'ble Prime Minister's 'Swachh Bharat Abhiyan'. FICCI has been flooded with requests from the industry and more than 175 applications are pending for processing, that's the success of the programme. FICCI's efforts in this programme are highly commendable. However, it would have not been possible without the active and intimate support of DRDO (DI^{2}TM). While DRDO may have to motivate their labs to become more proactive and hand-hold industry in commercial applications, they may also replicate this in 'Defence Technologies'. The success of such initiatives will accelerate 'Make in India'. DRDO may like to reinforce this initiative for greater proliferation and success to align with the Prime Minister's vision of 'Make in India'.

In all of this let us not forget to recognise the contribution of MSMEs and actively support them in terms of finance, bank guarantees, reservations for business and facilitation. A number of SMEs are already making investments. We need to feed the aspiration of our industry with a sustained demand, only then will the confusion disappear.

Industry has put the best foot forward, the political leadership has put their best foot forward, it is time to march to prosperity!

Celebrating 6th Anniversary

MODERNISATION OF

The overdue phasing out of squadrons and to make good the shortfall of nine squadrons would require very large amounts. On an average, a midsized fighter aircraft costs US$ 60 million. To acquire even just 15 squadrons over next 10 years, US$ 18 billion will be required just for new aircraft. Weapons and ground infrastructure will add up to much more. Union budget 2015-16 had US$ 40 billion earmarked for defence. Ninety per cent of the US$ 19 billion earmarked for new acquisitions this year would be required for committed liabilities of payments for earlier procurements.

The geopolitical situation in the region makes it incumbent on India to maintain the world's third largest armed forces. Unfortunately the modernisation and build-up of India's military assets has not kept pace with its world status, economic strength and level of threat. Despite Prime Minister Modi personally driving the 'Make in India' campaign and more specifically for defence, lack of state-of-the-art military-industrial complex continues to force imports of military hardware. The identification, selection and induction of weapon platforms invariably take a decade. Complex procedures, bureaucratic red-tape, technical specification changes and at times political considerations cause delays. The Defence Procurement Procedure (DPP) has been repeatedly refined. Direct government-to-government purchase was the norm during Soviet days and is an option being often exercised in the last few years. Delays in procurements for Indian Air Force means extensions to ageing weapons and platforms with reduced operational efficiency, flight safety risks and a compromise of national security. Indian Air Force is down to 33 combat squadrons *vis-a-vis* the officially authorised 42 squadrons.

Current State Of IAF

Flight International 'World Air Forces' 2015 Edition estimates that IAF has 1,588 aircraft in service and is the fourth largest in the world. For years Soviet/Russian aircraft and ground systems have dominated the IAF inventory. Hindustan Aeronautics Limited (HAL) had license produced many Russian,

IAF: THE WAY FORWARD

Air Marshal Anil Chopra PVSM, AVSM, VM, VSM (Retd)

The writer was a pioneer of the *Mirage 2000* fleet and commanded a *Mirage* Squadron, two operational air bases and the IAF's Flight Test Centre ASTE. He was the Team Leader of an aircraft upgrade project in Russia. Currently he is a member of Armed Forces Tribunal at Lucknow and a member of Executive Council of Jawaharlal Nehru University, New Delhi.

British and French aircraft. IAF's top of the line air superiority fighter is the Sukhoi *Su-30 MKI*. 272 are on order and 230 have been delivered till date. Sixty-six Mikoyan *MiG-29* are in service and all are being upgraded jointly with Russia. The 57 Dassault *Mirage 2000* aircraft are also under upgrade to Mirage *2000-5 Mk2* standards with modern avionics and weapons. IAF also has 139 Anglo-French *Jaguar* and 85 *MiG-27* dedicated strike aircraft and both these types are also being modernised. Over 1,200 *MiG-21* variants were inducted into IAF.

1,000 of these were built under license in India. IAF is phasing out these fleets. The 125 upgraded *MiG-21 Bison* will be retained beyond 2017. Indigenous HAL Light Combat Aircraft (LCA) *Tejas* is meant to replace them. The same are under induction and first squadron should be operational by 2017. Among IAF's strategic assets are three *Beriev A-50* platform based *EL/W-2090 Phalcon* AEW&C. Two more are on order. Also IAF crews are currently training on the DRDO AEW&C Embraer *ERJ-145* aircraft to be inducted later. IAF has seven *Ilyushin-78* aerial refuelling aircraft.

The 105 Antonov *An-32* medium transport aircraft are the work-horses of IAF transport fleet and all are under an avionics upgrade. The aircraft also have bombing and para-drop roles. Dornier *Do 228* is used for light transport duties. Also used for communications duties is the Hawker Siddeley *HS 748*, a few of which remain in the IAF. Replacement for the same is being evolved. IAF's VIP Squadron operates the Boeing *737 BBJ* and Embraer Legacy *ECJ-135*.

Swiss Pilatus *PC-7 Mk II* is the basic stage trainer. 75 have been inducted and 38 more will be acquired. HAL *HJT-16 Kiran Mk I* and *II* are the intermediate stage trainers. The Kiran is to be one day replaced by HAL *HJT-36 Sitara* which is still under development and facing design issues. The BAE *Hawk Mk 132* is the advanced jet trainer. Later the IAF's formation aerobatic team will also convert to the *Hawk*. The 106 *Hawk* trainers were initially ordered and more orders are being processed. For years, HAL-built light utility helicopters *Chetak* and *Cheetah* have been used for training, rescue and light transport role. *Cheetah* and its re-engined variant *Cheetal* are used for high altitude operations. These aircraft are being initially replaced by HAL *Dhruv* Helicopter. In addition to the light utility role, *Dhruv* also has a weapon version. *Dhruv* are also used for the *Sarang* helicopter formation display team. Mil *Mi-8* has been the main medium lift helicopter of the IAF. Later they were replaced by more modern variants *Mi-17*, *Mi-17 1V*, and *Mi-17 V5*. One day IAF will have 139 *Mi-17 V5s*. IAF also operates three heavy lift Mil *Mi-26* helicopters. Two squadrons of Mil *Mi-25/35* attack helicopters operate in support of the Indian Army.

IAF's Unmanned Aerial Vehicle (UAV) fleet comprises of IAI *Searcher II* and *Heron* and they are used for reconnaissance and surveillance. IAI *Harpy* is the anti-radar combat UAV and DRDO *Lakshya* is used for aerial targeting practice. The well beyond their extended life *S-125* Pechora and OSA-AK *SAM-8* surface-to-air missiles are finally being slowly phased out and being replaced by indigenous *Akash* medium range system. Two out of the eight have already been delivered. IAF also operates *Prithvi-II* short-range ballistic missile. With the secure encrypted Air Force Network (AFNET) becoming operational in 2010, it has greatly enhanced communications and data transfer for the air defence network.

Modernisation – Work In Progress

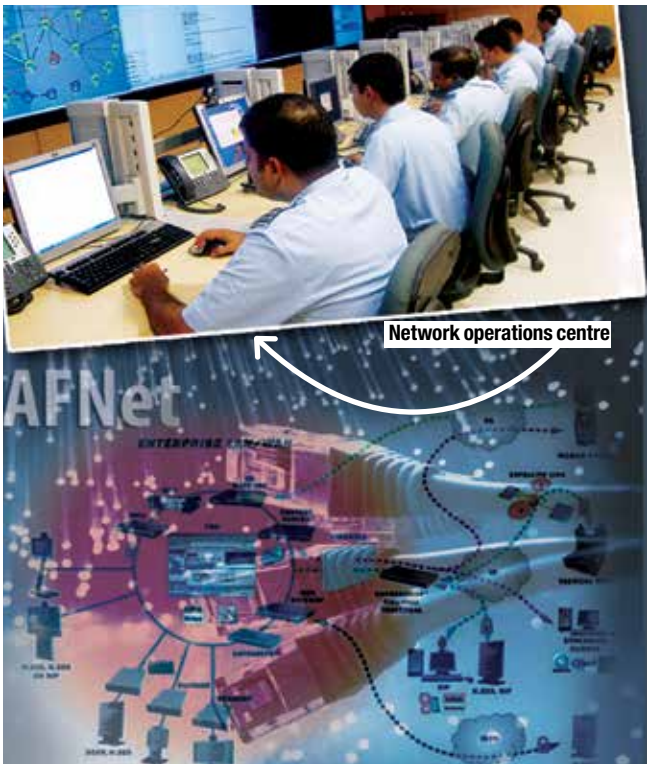
The modernisation programme of IAF started unfolding in 1990. It started procuring and developing

aircraft, weapons, associated technologies and infrastructures. The primary focus has been to replace or upgrade vintage aircraft and systems, most of which were purchased during Soviet days. In 2008 IAF awarded a US$ 865 million contract to upgrade the 66 *MiG-29* air superiority aircraft into multi-role *MiG-29 UPG*. The upgraded aircraft will have increased internal and external fuel carriage, aerial refuelling probe, latest avionics including *Zhuk-M* radar and new air-to-air missiles. The very potent air superiority fighter *Su-30 MKI* is being upgraded to have strategic weapons like *BrahMos* cruise missiles and nuclear-capable *Nirbhay* missiles. Initially 40 aircraft will be modernised and will include active electronically scanned array (AESA) radar, more powerful onboard computers and a new electronic warfare (EW) suite. First aircraft are expected later this year. Russians who supply many components of *Su-30* have started increasing costs and therefore the aircraft is no longer very cheap. The *Mirage-2000* aircraft are being stripped down and rewired for the upgrade and will include new avionics such as the *RDY-2* radar, new mission computers, glass cockpit, helmet-mounted sight, EW systems and the advanced *MICA* missiles. Aircraft life is also being increased by 20 years. Upgraded SEPECAT *Jaguars* are getting the multi-mode radar, an autopilot and more powerful Honeywell *F125IN* engines.

Much-delayed LCAs

Although the first LCA *Tejas Mk I* was ceremonially handed over by Defence Minister Manohar Parrikar to the IAF in January this year, the first squadron will form only in early 2016 and become operational not earlier than late 2017. The IAF has a requirement of 200 single-seat and 20 two-seat aircraft. Forty *Tejas Mk I* have been ordered. The IAF has also committed for 83 *Tejas Mk II* with the more powerful 98 kN thrust F414 engine and which is more likely to meet the LCA FOC, albeit not earlier than 2022. Finally IAF requires 14 LCA Squadrons with 294 aircraft to replace the *MiG-21s*. DRDO also has plans to develop indigenous active electronically scanned array (AESA) radar *Uttam* and a development partner is under selection. Europe's Airbus Defence and Space and Israel's Elta are contenders. *Tejas* is also to be equipped with an Infrared search and track (IRST) sensor pods, FLIR targeting pod, ECM pods, flare and chaff pod, EO/IR sensor pod etc. The electronic warfare (EW) suite *Mayavi* is to be developed by Defence Avionics Research Establishment (DARE). In view of delays, unspecified numbers of EW suites have been purchased from Israel's Elisra. A stealthier LCA *Mk III* is also planned later. IAF had earlier selected Dassault *Rafale* as medium multi-role combat aircraft (MMRCA) and negotiations were on for 126 aircraft. During his visit to France in April 2015 Prime Minister Modi had announced that India would purchase 36 aircraft in fly-away condition. Modalities are being worked out.

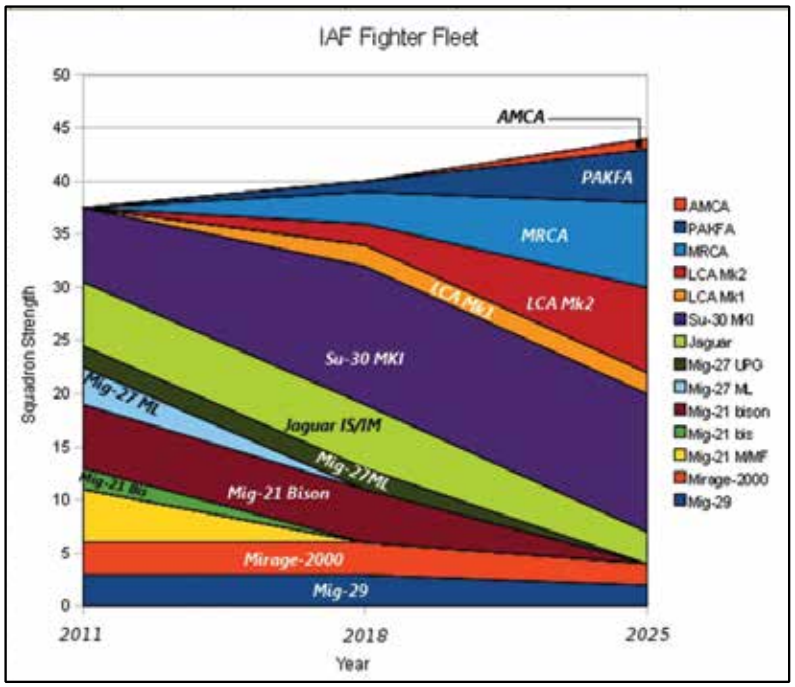
Lack of state-of-the-art military-industrial complex continues to force imports of military hardware



Heavy-lift Capability

Six additional Lockheed *C-130J Super Hercules* special operations aircraft are being ordered and will be based in the eastern region. Acquisition of 10 additional Boeing *C-17 Globemaster III* aircraft is being processed. Such a purchase will give IAF significant global strategic capability. Fifty-six medium transport aircraft EADS *CASA C-295* to replace the *HS-748* fleet will now be built in India by a consortium of Airbus Defence and Space and Tata Advanced Systems. IAF is committed to buy 106 Pilatus *PC-7 Mk II* trainers. As part of the 'Make in India' programme, go ahead has reportedly been given to HAL to produce 68 *HTT-40* basic trainers along with an international partner. HAL has chosen Honeywell *Garrett TPE331-12B* turboprop engine for the same. Fifteen heavy-lift Boeing *Chinook CH-47F* and 22 Boeing *AH-64D Apache Longbow* attack helicopters have been selected for acquisition among many contenders after extensive trials. Additional ALH *Dhruv* helicopters are on order and one day IAF may have more than 100 aircraft. With the AgustaWestland deal for 12 *AW101* VVIP helicopters under arbitration, the *Mi-17* will be used for VVIP duties in the interim. In December 2014, Kamov *Ka-226T* was selected to be the Light Utility Helicopter for the three Services to replace *Chetak* and *Cheetah* fleets. Kamov will set up a plant in India to manufacture these. In the long run around 400 will be required. IAF has sent out a request for information (RFI)

to international suppliers for an unmanned combat air vehicle (UCAV) with low radar cross-section, high service ceiling, 925 km range and capability to carry precision-guided weapons in an internal weapons bay. In August 2008, a deal was signed with Israel to jointly develop an advanced version of the *SPYDER* surface-to-air missile, 18 of which are required by IAF. IAI *Harop* UCAVs have also been ordered. DRDO has also developed the nuclear capable *Nirbhay* cruise missile which is capable of hitting targets 1,100 km away with 2 meter accuracy.



The Unfolding Future

India and Russia signed a pact in October 2007, to develop a Fifth Generation Fighter Aircraft (FGFA) which is a derivative of the in-development single-seat Russian *Sukhoi PAK-FA*. The aircraft will be jointly produced by HAL and Russia's United Aircraft Corporation. Aircraft is targeted to be inducted into IAF by 2017. IAF requires 200 twin-seat and 50 single seat aircraft to replace *MiG-29s* and *MiG-27s*. HAL and ADA have also started design work on a 5th generation stealth multi-role Advanced Medium Combat Aircraft (AMCA). This will one day replace the SEPECAT *Jaguar* and Dassault *Mirage 2000* fighters. The IAF requires around 250 AMCAs. Six Airbus *A330* tankers are also on order. DRDO's Centre for Airborne Systems (CABS) is developing Embraer *EMB-145* regional jet based Airborne Early Warning and Control (AEW&C). The aircraft will soon be delivered to the IAF after integration of missions systems of DRDO. A foreign vendor will supply the Active Array Antenna Unit (AAAU) and other sub-systems selected by IAF. The IAF requires 24 such aircraft. HAL and United Aircraft Corporation (UAC) of Russia will jointly develop and build an *Il-214* design based Multirole Transport Aircraft (MTA). Both are investing US$ 300 million each and aircraft is expected to enter service by 2018. The 18.5 ton payload and 2,500 km range jet aircraft will also have para-drop role. IAF plans to acquire 45 MTAs.

BMD A Decade Away

The 'Make in India' campaign has given a fresh lease of life to otherwise floundering HAL *HJT-36* intermediate jet trainer. IAF had committed for 73 aircraft. There are still serious design issues to be resolved. HAL is developing the Light Combat Helicopter (LCH) for the IAF based on the *Dhruv* platform. Sixty-eight are required and are being designed for anti-infantry and anti-armour role and will be capable to operate from altitudes of 6,500 metres. DRDO is developing a Medium Altitude Long Endurance (MALE) UAV named *Rustam* to replace /supplement the *Heron* UAVs in service. They are also developing the AURA (Autonomous Unmanned Research Aircraft) an Unmanned Combat Air Vehicle (UCAV) which will be a tactical stealth aircraft built largely with composites and capable of delivering laser-guided strike weapons. India and Israel have agreed to expand their missile development cooperation with a longer-range version of their extended-range *Barak-8* air defence system for the IAF. The DRDO is likely to develop the *Maitri* LLQRM (Low Level Quick Reaction Missile) with MBDA. Induction of at least four more Israeli Aerostat radar systems is still in process. The indigenous *Rohini* and *Reporter* ground-based radars must grow in numbers in the meanwhile. After induction of 19 Israeli Elta *2284* Medium Powered Radars (MPR), IAF awaits DRDO's *Anudhra* MPR. There is a need for early induction of mountain radars to cover the northern border. The indigenous Ballistic Missile Defence (BMD) system based on the *Swordfish* radar derived from the Israeli *Green Pine* radar and the *Prithvi* Advanced Air Defence (AAD) missiles should be in place in next eight-ten years. Indigenous *Astra* BVR (Beyond Visual Range) air-to-air missile has already been tested successfully on *Su-30 MKI*. Induction process is on. IAF's US$ 42 million 'Modernisation of Airfield Infrastructure' (MAFI) project, led by Tata Power's Strategic Electronics Division continues to run behind schedule.

Cost Of Modernisation

The overdue phasing out of squadrons and to make good the shortfall of nine squadrons would require very large amounts. On an average, a midsized fighter aircraft costs US$ 60 million. To acquire even just 15 squadrons over next 10 years, US$ 18 billion will be required just for new aircraft. Weapons and ground infrastructure will add up to much more. Union budget 2015-16 had US$ 40 billion earmarked for defence. Ninety per cent of the US$ 19 billion earmarked for new acquisitions this year would be required for committed liabilities of payments for earlier procurements. Pakistan is quickly adding *JF-17s* and upgrading *F-16s*. China is developing state-of-the-art fighters, transport aircraft and helicopters. It is time to get the house in order and to take hard decisions. DSA

WHITHER NATIONAL SECURITY
PARADIGM SHIFT IN THE 21ST CENTURY

National security, today, is an amalgam that needs intellectual inputs, rather than routine bureaucratic 'noting on file'. This is applicable to the military as much as it is to civilian bureaucracy. Sadly, neither the men in uniform nor those out of it, recognise this requirement. There is a need of placing specialists, rather than generalists, in security related departments which need to interact with other crucially important ministries. Rather than have anticipatory security planning, our departments/ministries are geared up only for short-term or crisis management actions. There is a general apathy and lack of awareness towards long-term security planning. Some signs of change are seen on the horizon, but end result is yet far away.

The definition of national security has assumed a multifaceted dimension with associated wider challenges, with the changeover starting some time towards the end of the last country. The world, since then, has witnessed a paradigm shift in the approach towards national security with a transition from the traditional and narrow concepts, to more unrestrained and all-encompassing definitions. National security has moved away from the traditional defence related issues; this, however, does not indicate that the regular threats of the military, nuclear and low intensity conflicts are now irrelevant. They continue to remain important, but added dimensions from other fields such as economic, environment, energy and information, have added value to the concept of national security, where there was limited to zero appreciation hitherto.

America emerged as the undeniable victor from the long Cold War, leading to a unipolar world. For almost a decade after the break-up of the Soviet Union, it was the sole super power with no nation having either the capability or the capacity to challenge its status. That status was challenged, not by Russia or China, but by non-state actors. It may continue to be the leading power bloc, but balancing its relations with other nations requires the entire diplomatic corps to test its skills, backed by a deterrent, in the form of a strong military.

A nation has to have a spectrum of strategies, ranging from persuasive diplomacy to economic sanctions to military operations

In South Asia, India occupies the unenviable position in an arc of instability with traditional and non-traditional threats. Multi-directional threats, as a rule, demand a well-coordinated response from more than one agency, simultaneously at times. This requires a mechanism at the apex with a holistic monitoring of the situation, as it evolves. In the past, threats to the nation were usually unidimensional; in times of war, the military, the Ministry of Defence (MoD) and the civil defence structure coordinated the response. With no declared war for many decades, there is supposedly peace in the subcontinent. Yet, for long, the Armed Forces, the Central and State police forces and very many other government departments, are involved in facing the challenges posed by terrorism, insurgency, economic downturn, energy crisis, cyber-attacks *et al.* An extremely high degree of inter-agency synergy is essential to secure the nation as the impact of a single crisis, at times, is felt across many disciplines and in varied forms.

Revolution In Military Affairs (RMA)

In this era of RMA, warfare is getting increasingly technology-oriented. Future wars are predicted to be short, swift and complex. This bias is here to stay and cannot be wished away, yet the nature of war is predicted to continue to be the same, but will it really be so? The change is already upon us, it is the men and women in uniform and others in policy-making capacities, who need to comprehend the change and manage it by understanding its dimensions through training, education and adapting themselves to the changes in an ever, ongoing process.

The RMA has resulted in a paradigm swing in the nature and conduct of war. War is no longer fought in a traditional battlefield; rather, it has now moved into the urban area against a faceless and even a non-state enemy, who may even have access to the latest technology. The traditional threats facing a nation are well-known. The military threat can be subdivided into conventional and nuclear threats. The conventional threat, as it is normally acknowledged, also comprises of low intensity conflicts (LIC) and counter-insurgency operations, while the nuclear threat is not necessarily just the Hiroshima type. A nation like India, thus, has to equip for threats across this spectrum for an offensive, as well as a defensive action.

Ever-widening Spectrum Of Warfare

National security is no longer the exclusive domain of the Armed Forces; it is also the concern of all citizens. In

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The writer retired as the AOC-in-C of Training Command, IAF on 29 February 2012. A pilot by profession, he has flown various fighter and transport aircraft. In his long stint in the air force of about 40 years, he has held many operational and staff appointments. Prior to taking over as the AOC-in-C, he was the Deputy Chief (Operations) in HQ IDS. He has commanded a premier transport squadron in the Northern Sector, Air Force Station, Yelahanka – the main transport training base of the IAF and the Air Force Academy at Hyderabad. He is the first air force officer to have undergone an International Fellowship at the National Defense University, Washington DC, USA. He is a postgraduate in 'National Security Strategy' from National War College, USA.

a developing/underdeveloped nation as ours, the less fortunate constantly worry about the provision of the next meal and dream of a life without poverty. It is the more fortunate and the educated (Note the use of the term 'educated' against the term 'literate') amongst the population of the country, who need to spend some of their time towards engaging in topics of national security. The last few decades in India, have seen a steady decline of ideology in politics, while witnessing a steep increase in the after-effects of ideological differences. In the 21st century, globalisation and market forces have been driving the environment; the media adds to the conundrum of the events. Strategists, academia and analysts further add to the confusion of national security through articles (such as this!), lectures and seminars. It is this mystery of national security, of tackling challenges within and outside the country, which needs to be resolved, defining for ourselves the boundaries of security.

The variants of a traditional threat can be complex, multifaceted and unpredictable. The then Defence Minister, AK Antony, had mentioned during the Unified Commanders Conference in June 2008, *"Our security planning must be able to anticipate and plan in advance. Owing to the complexities of security threats and challenges, defence policy formulations must keep evolving constantly."* Similar thoughts were expressed by Prime Minister Modi too last year, at the same forum. For India's national security, there are some constant external threats, such as Pakistan and China, with whom a conventional conflict can occur even under a nuclear shadow. Conventional warfare, thus, cannot be disregarded.

Traditional threats need not just be confined to the Indian mainland and its island territories. Without any regional aspirations, India's sphere of interest for its economic growth extends from the Middle East to the Far East and even beyond, in both directions. The extended neighbourhood has now a different connotation, with the frontiers extended beyond our conventional perception. This does not imply a physical deployment of forces beyond the national borders, but having the capability to do so through the accretion of military assets for operation in times of natural calamity or even human intrusions; so aptly demonstrated during the mass evacuation from Yemen and in the Naval intervention for anti-piracy operations off the Somalia coast.

New Threats

The paradigm shift in the nature and conduct of war is not just restricted to traditional threats, but also non-traditional threats. With warfare constantly evolving over the centuries, new forms of conduct of warfare have emerged periodically. The world is today facing new tactics with emerging technology, combined with societal changes. MM Pallam Raju, the then Minister of State for Defence, while delivering the keynote address during a seminar on 'Indian Way of War-fighting', in June 2008, had stated, "With a stable democracy and a vibrant economy with advanced technological base, our armed forces should be prepared for full spectrum of security challenges spanning sub-conventional, asymmetric, fourth generation warfare, both conventional as well as using weapons of mass-destruction."

Fourth Generation Warfare is, thus, the main manifestation of non-traditional threats, as it obscures the line between war and peace through selective targeting, not just the police and the defence forces, but also the society. The general populace may be the main target and not the military; the fighters may not be men and women in uniform relying on military hardware, but may be faceless, relying on information and media impact. Such a war fought on the cultural, social, economic fronts at the global, regional and national levels, demands networking and synergy between agencies as an absolute essential.

National Interests

Globalisation, an end-result of many factors, has led in greater connectivity, integration and interdependence in fiscal, communal, technological, educational, political and green spheres; but, has also created divides and inequalities, causing adverse effects. The impact on a nation state includes reduction in information regulation and increased external political, social and cultural influence, which, in turn has a significant bearing on the definition and scope of national security.

National interests represent a country's aspirations. The definition also includes a nation's desire for peace and prosperity through socio-economic development that strengthens the secular, pluralistic and democratic fabric of the state. With this as a setting, what could be the national interests of India, apart from the fundamental and most important ideology of securing the territorial integrity? India desires regional peace, as peace alone can promote development, not only within India, but in the neighbourhood too. It looks for stability within and outside the country, with the establishment of the rule of law, as then the fruits of inclusive economic growth can be passed on to the weaker sections of society.

There was a general feeling around the world that with the end of the Cold War, the security environment would become benign. The developments, however, have indicated otherwise and security challenges, over the world, have increased. A global and regional scan of the differing views, beliefs, demands and aspirations, fuelled by globalisation, has implied that India cannot take a back seat on any issue, as it could have a direct bearing on the stability, growth and development, both within the country and the region. The challenges are diverse and it is these very challenges that pose a threat to our national security. If it is so, do we have a national strategy to meet these diverse challenges or do we deal with them on a crisis-to-crisis basis? It has to be accepted that the basic concept of national security has undergone a paradigm change. Just military strength does not ensure national security. The various governmental agencies, including the armed forces, need to coordinate their activities and their strengths to ensure holistic security of each citizen of the nation.

The nation should continue the policy of restraint while bolstering the military capabilities as deterrence

New National Security Edifice

The identification of principal role players and their efficacy in decision-making in affairs of national security, is important for any nation. Largely, the process of decision-making at the top level is centralised; in India, the route followed by the Prime Minister and the Council of Ministers to formulate the national security policy is through various committees. At the working level, the bureaucracy, both civil and military, aptly supported by advisers, is supposed to assist the various committees. Does this always occur the way it is supposed to? Sadly, the answer is in the negative.

On the architecture, it would be advisable not to go by the tag of the National Security Commission. Whether it is the National Security Council, National Development Council, or the newly formed Niti Ayog, it should have the necessary expertise to devise and articulate a security policy to tackle the evolving conditions and emerging challenges, be they diplomatic, economic or military. Policy, when put forward, will be the foundation of the National Security Doctrine, which due to the continuous evolution of the changing circumstances, would be a 'work in progress'. What, however, would be critical is the proficiency level and the design of the edifice, with the astuteness to add-on or delete redundancies, thus improving upon the response time and quality of the response.

National security, today, is an amalgam that needs intellectual inputs, rather than routine bureaucratic 'noting on file'. This is applicable to the military as much as it is to civilian bureaucracy. Sadly, neither the men in uniform nor those out of it, recognise this requirement. There is a need of placing specialists, rather than generalists, in security related departments which need to interact with other crucially important ministries. Rather than have anticipatory security planning, our departments/ministries are geared up only for short-term or crisis management actions. There is a general apathy and lack of awareness towards long-term security planning. Some signs of change are seen on the horizon, but the end-result is yet far away.

Diplomacy And Military Theory

In the words of Arnold Wolfers (1892-1968, an influential expert in the field of international relations), *"Security in an objective sense, measures the absence of threats to acquired values; in a subjective sense, it measures the absence of fear that such values will be attacked."* Achieving security requires a plan; a key element in the analysis at the national level is getting the ideas in order in line with the shape and operation of the international system. In foreign affairs, this equates to defining national interests and objectives, a task not so simple as it appears. Given a clear vision of national interests and objectives, with the ability to project power, diplomacy can be defined as devising strategies to use the available means, economic or military, to achieve the ends.

To achieve the national interests and objectives, a nation has to have a spectrum of strategies at its disposal, ranging from persuasive diplomacy to economic sanctions to military operations, for the ultimate instrument of a nation's power is war. It is considered a double-edged weapon, for in the words of Sun Tzu, *"War is a matter of vital importance to the State; the province of life or death; the road to survival or ruin."* Developing military strategy for the conduct of war requires reconciling contentious issues and contending approaches, which may have worked, at one point or the other, in some distinct set of circumstances, such as, offence versus defence, annihilation versus attrition versus disruption, protraction versus limited operations.

Concluding Thoughts

National security decision-making, today, has become a very comprehensive process than it was even in the last decade of the last century. With the diverse challenges in equally diverse spheres, there is a need to have additional agencies involved to appreciate and resolve them, working not in 'stovepipes', but with a synchronised flow of information, vertically and laterally.

The enhancement of power and influence should continue to be for the defence of the nation's sovereignty, territorial integrity and promotion of global good. The policy-makers should avoid offensive doctrines or harsh diplomatic postures, while at the same time strengthening the nation's capacity to defend its core interests in the world. Historically, Indian leaders have demonstrated competence in combining strength with humility, restraint and power with purpose. The strengths are derived from history, culture, people and the democratic institutions. The Armed Forces and diplomatic apparatus are manifestations of the national purpose of defence and development. The nation should continue the policy of restraint while bolstering the military capabilities as deterrence.

The international system has changed dramatically since the end of the Cold War. One of the most important aspects of that change has been the growing number and influence of non-state actors. As with national security strategy and military strategy, effective analysis of regional issues and the formulation of coherent policies require a conceptual and an analytical framework to resolve problems. This knowledge is essential not only amongst the Armed Forces but also in the bureaucracy; it would be a two-way flow of ideas benefiting both and the nation in the larger perspective.

DSA OCTOBER 2015
THE CONCEPT

THE THEME

A New Dawn for Indian Defence and Security — Expansion, Restructuring and Modernisation

DSA unveils its **Sixth Anniversary Edition** as the Indian defence and security fraternity witnesses a new 'Dawn' of hope and resurgence after more than a decade of anguish and despondency. Urgency due to geopolitical and geostrategic threats from inimical neighbours and Jihadis has prompted the new government to reenergize and accelerate the fortification of India's defence and security.Alluring and enthralling campaigns of 'Make in India', 'Digital India', 'Skill India' and 'Smart Cities' by Prime Minister Modi; escalation of FDI to 49 per cent in Defence with the possibility of much more on full technology transfer; promising big ticket pronouncements by the Defence Acquisition Council; initiative of *Raksha Mantri* to evolve a policy framework for facilitating 'Make in India' within the purview of the Defence Procurement Procedure (DPP) and streamlining the procurement process and dynamic modernisation and upgradation of Security Forces for enhanced homeland security by the MHA have rekindled the anticipation of a revamped and robust defence and security apparatus in the country.

THE COVER

Glorious and majestic Indian flag, intrepid soldier, watchful eyes in the background of vibrant hues of a new dawn so vividly capture the essence of the theme heralding a smart and resurgent India!

Celebrating 6th Anniversary

AIR POWER AND

The essential characteristics of air power are that it is strategic in nature and is primarily an offensive power; on both these counts, the IAF is on a weak wicket. Its ownership of restricted 'strategic' assets provides but very limited reach and its current strength of offensive aircraft is inadequate to the task of a 'two front war' if China and Pakistan decide to collaborate at our borders. Should we continue to neglect our inadequacies in air power, national security (and national honour) could both be at stake in coming years.

In unpretentious terms, national security implies the ability to be free from external coercion and at the same time possess the aggressive capacity to coerce an external entity into desisting from harming the nation's populace, resources, integrity and territory. A logical corollary is that, if required, the nation is prepared to wage a war to accomplish a change in enemy beliefs and intents towards assuring its own national security. While war is – arguably – as old as mankind, the contribution of air power to war is only a little over a century old with only one battle (Battle of Britain) being attributed the distinction of having been won essentially by air power. The Battle of Britain and other air campaigns of World War II brought to the fore the substantial contribution of air power to its course, outcome and conclusion; the final culminating, climactic scene was played out by atomic weapons being delivered through the massive reach of air power. Large scale conflict episodes during the ensuing Cold War era did not really serve to highlight the immense advantages of air power in war because air power could not bring about an outcome on its own in these wars (Korea, Vietnam *et al).* Even after the end of the Cold War, the world has not been free of conflict. Air power has been used extensively in these conflicts and wars in pursuit of national objectives; indeed, power projection thousands of miles away from own territory (as in the case of US) would not have been possible except

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through the employment of air power. This article looks at how air power buttresses national security.

Aerospace Power

The concept of Total War (and the contribution of air power to it) is no longer a template for war waging, with the nuclear (and other mass destruction) dimension changing the whole gamut of war. However, the concept of Centre of Gravity could still be seen as persisting in the strategic mind. As far as air power is concerned, it is still possible to conceive – in any war scenario – a strategic target system that would upset the enemy and topple him from an upright stance (much like the physical concept of Centre of Gravity being associated with a tip over). Even so, there have been changes in the manner that air power can be applied; some of these paradigm shifts have come about as a result of rapid advances in technology, with a major change being the distension of the air dimension into the space beyond. It could be argued that the mediums of air and space are differentiable by the characteristics of the forces required to operate in each as also the basic tenets of employing those forces. Indeed, some professionals including General Charles 'Chuck' Horner, a former commander of US Space Command, have advocated the creation of an independent Space Force, separate from the Air Force. However, these differences would appear to be inadequate for new paradigms of war fighting to emerge and, for most nations (including India), the term 'aerospace power' would suffice to project a concept for the use of air power as traditionally understood to an extended construct of aerospace power which would broaden in scope to include space capabilities, operational concepts and doctrinal tenets for the employment of air power in pursuit of national security. In this article the term air power is used to convey the sense of aerospace power as described above.

Should we continue to neglect our inadequacies in air power, national security could be at stake

UAVs And UCAVs

Another dimension of air power is the advent of Unmanned Aerial Vehicles (UAVs) and Unmanned Combat Aerial Vehicles (UCAVs) as useful aerial systems; their development represents a new constituent to be employed in the air with nearly all the benefits of manned aircraft and with hardly any of their disadvantages. Here is an illustration to highlight the significance of UAVs/UCAVs to air power: A US *Global Hawk* UAV reportedly returned from the war zone in Iraq under its own power to Edward's Air Force Base in California (the normal mode of transportation on the same route hitherto had been on board a *C5).* Linked via satellite, the *Global Hawk* is controlled via satellite, its control centre located at Edwards Air Force Base in the US. It can taxi out, take off, fly a mission, return, land and taxi back on its own. It can stay airborne for almost 2 days at altitudes above 60,000 feet, enter a mission zone at very high speeds and fire its onboard missiles. There is no radio communication required as all elements necessary for the mission are linked. Moreover, there are no pilot related (psychological and physiological) problems normally associated with such long duration missions. Finally, in case of a major accident, there could be a hull loss but no precious lives of pilots or other crew would be sacrificed.

Of course, there are those who argue against the UAV being the solution to all air power problems and requirements. One of the major arguments is that, in parallel with the advancements in UAVs and the associated two way links required to control them, there are developments afoot to produce equipment to jam these links. The vulnerability to this jamming possibility raises a question about their survivability in an intense conflict situation wherein a UAV loses communication with its controller. The champions of manned flight aver that this very possibility begs the requirement to have aircraft manned by trained professional crew capable of intellectual, judgemental, reactive and informed decisions based on their experience and training. A study of the arguments on both sides and the emerging developments in UAVs/UCAVs suggest that the future of air power will inevitably integrate manned and unmanned platforms in the air so as to make the best use of air power for ensuring national security. India appears to be on the right tracks on this count.

Aerospace Industry

World War II fostered momentous quantitative and qualitative growth of aircraft and their onboard weaponry; the momentum has been kept up by the Cold War and post-Cold War impetuses provided by global conflicts. India, with two inimical neighbours, great power aspirations and an extensive territory to defend, very obviously needs strong capability in the aerospace domain. However, while the foremost employer nations of air power have been the leading producers of aircraft and aircraft armament, India has sadly lagged behind in this respect. India did start off on a good footing and produced a home-grown, indigenous fighter – the *HF 24* – in 1961. The *HF 24* was not at the leading edge of aircraft technology available to the world's big manufacturers but then it was the result of

just about a decade of development. However, we lost the initial momentum in aircraft development as three wars in the next decade (one with China and two with Pakistan) impelled our decision-makers to move towards speedy procurement from leading manufacturers abroad, at the cost of neglecting indigenous development. While the decision to procure foreign aircraft to meet immediate security requirements was unexceptionable, the subsequent (and consequent?) decision to smother indigenous development resulted in decades of dependence on foreign aircraft, a state that continues till date.

The decision to keep private sector away from military aircraft development is the single major reason for the state of our aerospace industry. Hindustan Aeronautics Limited (HAL) and National Aeronautical Laboratory (NAL) have been the public sector organisations tasked to produce military aircraft. While HAL has been up to the task of producing foreign aircraft under license (with negligible transfer of technology), design and development of new military aircraft has been unsatisfactory. The *Tejas* Light Combat Aircraft (LCA) has been more than three decades in the making and is still not close to being accepted as a combat aircraft by the Indian Air Force (IAF). As a result we are still reliant on foreign aircraft for our national security.

In the space arena (the other half of aerospace), we have done exceedingly well and are in a small band of nations that have advanced space and missile programmes with significant achievements to our credit, including a mission to Mars. However, our superior technology accomplishments in the space domain cannot by themselves render us into an aerospace power capable of ensuring national security, given our unfriendly neighbourhood.

Two Front War

The Indian military has always considered a two front war a probability to be planned for. Last year the IAF was constrained to tell a Parliamentary Panel that it would be difficult to manage a two front war although it had some plans for tackling that situation. Understandably, the media played up this 'alarming admission' by the IAF. However, those who understand Indian military affairs are not surprised as defence preparedness of the nation has generally weakened progressively over the past decade or so.

Going back to the 60s, the IAF was authorised a 64 squadron force, including 10 transport squadrons and a heavy bomber squadron. Subsequently the figure was pruned down to 45 squadrons. However, it never grew beyond 39.5 squadrons and is currently at a 34 squadron level (although some might argue that its effective strength is lower than that figure). The current combat aircraft strength is around 650; IAF's hopes of acquiring 126 *Rafales* were also dampened to a much lower figure of 36; the final deal is yet to be signed off. IAF's fond hope is to achieve an effective strength of 42 squadrons by 2022. This is expected to be done with the ongoing induction of 272 *Su-30s* and future plans for induction of 126 MMRCA aircraft (including 36 *Rafales*). The *Tejas* LCA, whenever our defence industry can get its act up to the required standard, and *T 50*, the fifth generation fighter being jointly developed by India and Russia are expected to be part of this 42 squadron line up.

Meanwhile, the IAF is a waned force which, qualitatively is awe inspiring but quantitatively, lacks the punch required to stave off our known enemies. A combined and well-coordinated threat from China and Pakistan at the same time would overstretch our military beyond its elastic limits and the result could well be what both our neighbours evidently covet – a humiliating and shameful thrashing on the ground and in the air.

Epilogue

The stunningly powerful and flexible effect of air operations can be an ideal instrument for the pursuit of national political objectives serving national security. The changing face of conflict, however, casts a gloomy shadow over the effectiveness of air power in some scenarios. For example, the jury is still out on whether aerial operations have had a salutary effect against ISIS campaigns on the ground. Undoubtedly, the efficacy of air power as a handmaiden for national security will be predicated to how the concerned nation amalgamates learnt air power history lessons into modern day context and then draws up its air power doctrine. The mission statement of the IAF (as enshrined in its doctrine) is 'To be a modern, flexible and professional aerospace power with full spectrum capability to protect and further national interests and objectives'. The essential characteristics of air power are that it is strategic in nature and is primarily an offensive power; on both these counts, the IAF is on a weak wicket. Its ownership of restricted 'strategic' assets provides but very limited reach and its current strength of offensive aircraft is inadequate to the task of a 'two front war' if China and Pakistan decide to collaborate at our borders. Should we continue to neglect our inadequacies in air power, national security (and national honour) could both be at stake in coming years. DSA

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MAKE IN INDIA FOR AN INTERDEPENDENT WORLD

It has been just more than a year since PM Modi sowed the seeds of 'Make in India'. All of us in the production of goods, particularly defence, marvelled at this simple idea, taking hold of people's imaginations. It truly brought focus on what India was trying to do – make stuff in India which was to be consumed by Indians themselves and anything left over could be exported too. In an interdependent world, the proposition appealed to the business minds of everyone as it opened newer doors and windows for symbiosis and synthesis. India has competitive advantage in terms of human resources and a captive market while potential global partners possess comparative advantage in high-end technology.

Sweden is a creative country characterised by pioneering ideas and new ways of thinking that seeks to co-create a mutually beneficial future in an interdependent and interconnected world. Sweden does not seek a buyer in India but a strategic partner for long-term cooperation, including in the arena of future defence and industrial development. Sweden understands that in today's competitive world, the key to success rests in focusing on collaboration, alliances and technology sharing with partner countries. With India committed to creating a strong domestic defence industry, Sweden sees itself as a perfect partner that can enable creation of a domestic defence industry due to its inherent philosophy of industrial cooperation in an interdependent and interconnected world.

Over the last few decades, Saab has gone from being a primarily Swedish company, to being a truly global organisation – with sales to over a hundred markets and almost 75% of the order backlog coming from outside Sweden. Throughout Saab's history, one of the defining philosophies has been that partnerships are key to developing a thorough understanding of any country. It is this same philosophy that guides Saab in India, as it increases its presence here through teaming agreements, joint ventures, R&D tie-ups and joint development programmes with true transfer of technology.

The 'Make in India' movement can do lot of good for both India and Indians in terms of job opportunities which will be available in India. India can also, for perhaps the first time ever, leverage her large, ever increasing population for a piece of the global manufacturing pie. We believe that there should be a Knowledge Transfer Mechanism built into the core of all production. In an interconnected world, the goal should be to see how you can learn from (and give learning to) all the producers who are waiting for the chance to make in India. In that way, 'Make in India' transforms itself into a mission which will be spoken about in years to come.

Saab and Sweden have a long history of sharing knowledge with their partners and it is with this spirit of sharing that we enter any process in the globalised world. The only progress is where both the parties in a partnership can say that they have learnt something beneficial from the partnership. In pursuance to true spirit of symbiosis and synthesis, we already have joint agreements with many in the Indian manufacturing space. With Aequs we have commissioned a joint venture, Aerostructures Assemblies India which is manufacturing assemblies for commercial and defence aircraft. We have also set up the Saab India Technology Centre, which is involved in R&D in collaboration with Tech Mahindra. All aeroplane manufacturers, civil or defence, usually consist of the Original Equipment Manufacturers such as Airbus or Saab surrounded by hundreds of small or medium-sized

suppliers of parts. All the clusters form this shape and we see the south of India transforming itself into such a cluster. Bangalore and Hyderabad are the likely centres of this aeronautics cluster.

India is probably the only large country in the world, which is almost totally dependent on external sources for its defence requirements. As per the Stockholm International Peace Research Institute, India accounts for as much as 14% of the total arms import during 2009-13. This is very piquant situation for India to find itself, when after independence the leaders had all sought to become self-sufficient in production of everything, especially defence. The 'Make in India' initiative is going to require everybody to work towards the same goal. Care must be taken to tie-up with countries and companies that have India's long-term interests in mind.

Words of Hakan Buskhe, global Saab CEO, come to mind. In the speech Hakan Buskhe made recently to the stockholders of Saab, he said, "When I speak to customers, industry partners, policy makers and other players, they often praise our steadfast approach to research and development. We are respected for our daring long-term investments and that we are constantly pushing for the most modern and competitive technologies. During 2014 we invested 25 per cent of our sales revenue in research and development." It is a source of great pride to us at Saab to be thought of as doing the right thing, every time. It is this commitment to R&D plus all the attendant benefits it brings, including not being afraid of failing that is part of our ethos.

Plus all our investments into aerospace R&D in Sweden bring us big bang for our buck. A lot of engineering companies also gain from our investments in R&D. Typically it is estimated that our investment gives us 2-4 times the return. In a way, Sweden is truly becoming a hot-spot of aerospace activity much in the way Bangalore has become for the IT industry.

One more fact about Sweden is that it has a very strict legislation which means that all of Saab's business opportunities are scrutinised by Swedish authorities with insight and transparency for our elected politicians in parliament. It is a judicious and coherent system which is largely unparalleled in the world. This is what PM Narendra Modi is aspiring to do with his 'Make in India' vision – that it should be transparent, every citizen of India should feel pride in it and it should do good for India.

Jan Widerstrom
The writer is Chairman, SAAB India Technologies Pvt Ltd.

What has been the experience of the Swedish and Brazilian people since Brazil signed up for the *Gripen*? For the people of Brazil and Sweden, it is almost a tipping point. It ushers in a new cooperation, a new understanding of each other and a new industrial leap. What were the reasons for Brazil to pick Saab and *Gripen* as their partner? Firstly the plane is totally apt for their needs, with it giving performance at a cost-effective solution. They want to be driving their own industry by being at the forefront of technology. The benefits to both countries are being seen with every passing day. There was an announcement of a joint programme management arrangement with Brazilian aeronautics manufacturer Embraer, which will produce most of the aircraft in Brazil under a technology transfer agreement.

Therefore the lessons for India. India has a 14% share in the global defence trade and is likely to spend around US$ 130 billion on defence in the coming seven-to-eight years. That makes it one of the largest defence markets in the world and the opportunity it presents should be taken advantage of. This will increase India's self-reliance in defence production and will also have a spillover effect on the rest of the economy. For this to happen, PM Narendra Modi must ensure that expectations and objectives of the government are aligned so as to make the government's 'Make in India' initiative a success story. DSA

SECURITY IN A DIGITAL ERA

We live in a world that is powered by Digital infrastructure and a complex matrix of sensors and devices that constantly track, monitor and even 'heal' some break-downs with little or no human intervention.

This includes critical infrastructure such as power grids, water distribution channels, Maritime & Aviation transport, Telecom networks, Electronic transactions, Banks & Financial institutions, Mass rapid transport mediums et al.

Add to this the eclectic mix of technologies comprising a combination of Always-on Internet, enhanced internet pipes, mobile wireless devices, IoT, M2M Communications, Convergent voice, data, video networks, social networking and cloud computing. These technologies available currently run the entitre gamut from 'seeing' (read cameras & sensors) to 'actioning' (read Automated Workflows) that almost seems like a scene from a sci-fi flick.

It is not hard to imagine the dire consequences if these systems are rendered unavailable or somehow compromised. They could result in catastrophic consequences that can have a profound impact on a city or a nation's defence, security, economic prowess, competitiveness, safety of citizens and their well-being.

Securing our Cities & Nation

It is said and rightfully so, that the wars of the future will be fought on Cyber turf with digital tools and ether-ammunition. A telling example of the impact of Cyber warfare is the much publicized incident of the assault on Iran's nuclear weapons program in 2010. A computer virus called Stuxnet infected Iran's top-security Natanz uranium enrichment site. All that the virus did, we are told was to increase the speed of uranium centrifuges to breaking point. Simultaneously, it shut off safety monitoring systems whilst maintaining the mirage of normalcy to the operators until it was beyond redemption. The premier reportedly admitted the virus had set back his country's nuclear ambitions. http://www.wired.com/2014/11/countdown-to-zero-day-stuxnet/

There is a compelling need therefore for security agencies to have a dynamic, proactive and a flexible approach with rapid response ability to respond to the changing environment–in terms of technology, usage, threat and risk. There should be a continuous state of digital alertness and an ongoing assessment of risk.

Attacks on critical computer systems in the government and private sector are increasing. They act as a means of subterfuge and cyber warfare for strategic or financial gains by criminals, terrorist groups and hostile intelligence services. Such attacks can be instigated from almost anywhere in the world and are inexpensive to conduct and could be hugely destructive There is a growing array of state and non-state actors who are compromising, stealing identities, compromising/ destroying information and thereby causing critical disruptions.

Securing our Businesses

It's clearly evident that big data brings a vast amount of positive aspects to both businesses and consumers. However, it's important to realize what huge data breaches can mean for both parties. Recent disasters such as the Sony Email data breach are clear indicators that more needs to be done to protect information stored on the cloud.

The entities that suffer the most from volatile data breaches in recent years are the healthcare industry and financial services industry, being that hackers have dictated that this is the most valuable information to obtain. According to Data Science Central, data breach has now reached up to $154 per record of stolen data, and this could add up to millions for the businesses using big data to run everyday operations.

For better or for worse, we live in a world where a substantial percentage of our lives is overseen electronically. In a world where more and more people and devices connect to the Internet, greater focus must be placed on security and privacy.

The speed of technological change associated with next generation networks is challenging traditional notions of what constitutes computer networks and how we should secure them. As the Internet continues to be integrated into more aspects of daily life and more and more personal and financial information is being placed online, cyber-crime is becoming an increasing concern to all of us. The inherent characteristics of a borderless, lightly regulated and largely anonymous online environment make it relatively easy for perpetrators.

As new technologies are introduced into the computing ecosystem, they bring with them new attack surfaces and security challenges. This past year saw a rise in the already prevalent mobile-malware arena. Connecting existing technologies to the Internet also brings with it a new set of exposures. Much is being written about the merits by IoT. While indeed it is true that newer technologies empower us immensely, the flip side is that they could very well be the entry point for subterfuge.

Unless there is a constant monitoring, tracking and elimination of Cyber threats – Critical Systems, Financial systems, medical facilities, large businesses et al are at the mercy of cyberattacks, which is precisely why the prospect of cyberwar is so appealing to aggressors and so terrifying to defenders.

Network defenders should use the information in this report to better understand the threat landscape, and best deploy resources to minimize security risk.

There are solutions available today that can analyze potential risks & vulnerabilities that can destabilize businesses and government infrastructure. As Smart Cities become a reality in the country, there is a strong underlying need to give cyber security its due and build threat management, incident rapid-response and resilience into the system.

HP is a leading provider of security and compliance solutions for a digital world that wants to mitigate risk in hybrid environments and defend against advanced threats.

The HP Security Intelligence Platform is a unique offering and combines the might of HP Security Portfolio such as HP ArcSight, HP Fortify, HP Atalla, and HP TippingPoint to deliver the advanced correlation, application protection, and network defenses to protect the complex Digital environments from sophisticated cyber threats.

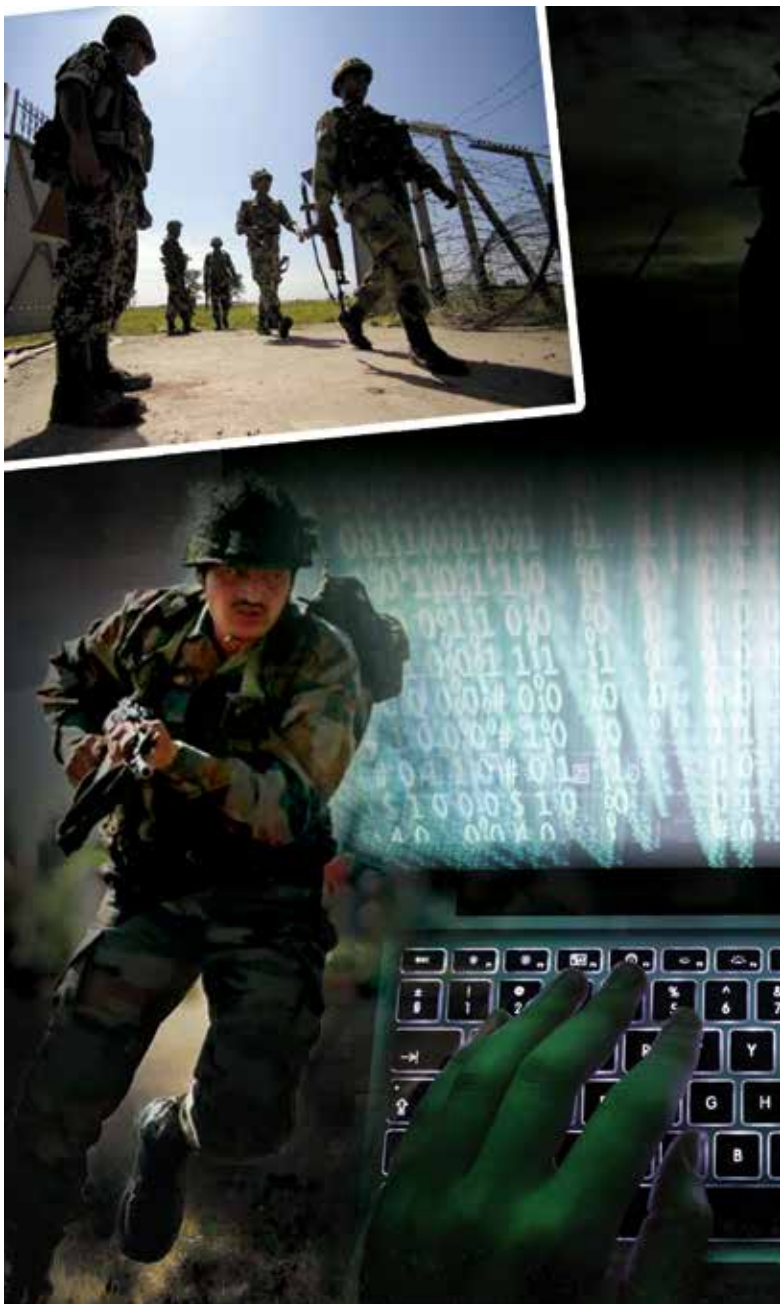
Celebrating 6th Anniversary

NATIONAL PRIORITIES INTELLIGENCE AS A FORCE MULTIPLIER

The ever increasing, formidable and myriad security challenges to the nation can only be met by synergetic Intelligence endeavour. The art and science of Intelligence can be effectively employed as a force multiplier not only to thwart the enemies of the state but in the promotion of its core interests, far beyond security matters. Thus India must accord to this useful tool the desired significance in its national priorities.

" ... good intelligence often has made the difference between victory and defeat, life and death. By the same token, faulty intelligence leads to failures of varying degrees."

– Hamid Ansari, Vice President of India



Since time immemorial, intelligence has been a vital and inseparable element of statecraft. Intelligence remains a critical tool for national security management. Timely and accurate intelligence, unquestionably, is the bedrock on which sound and timely decisions of a nation should be based. It is also a truism that whenever a catastrophe, a military defeat, a major terrorist action or a national security setback occurs, more often than not, blame is attributed to failure of hard or actionable intelligence even if it may be a systemic or a leadership shortcoming.

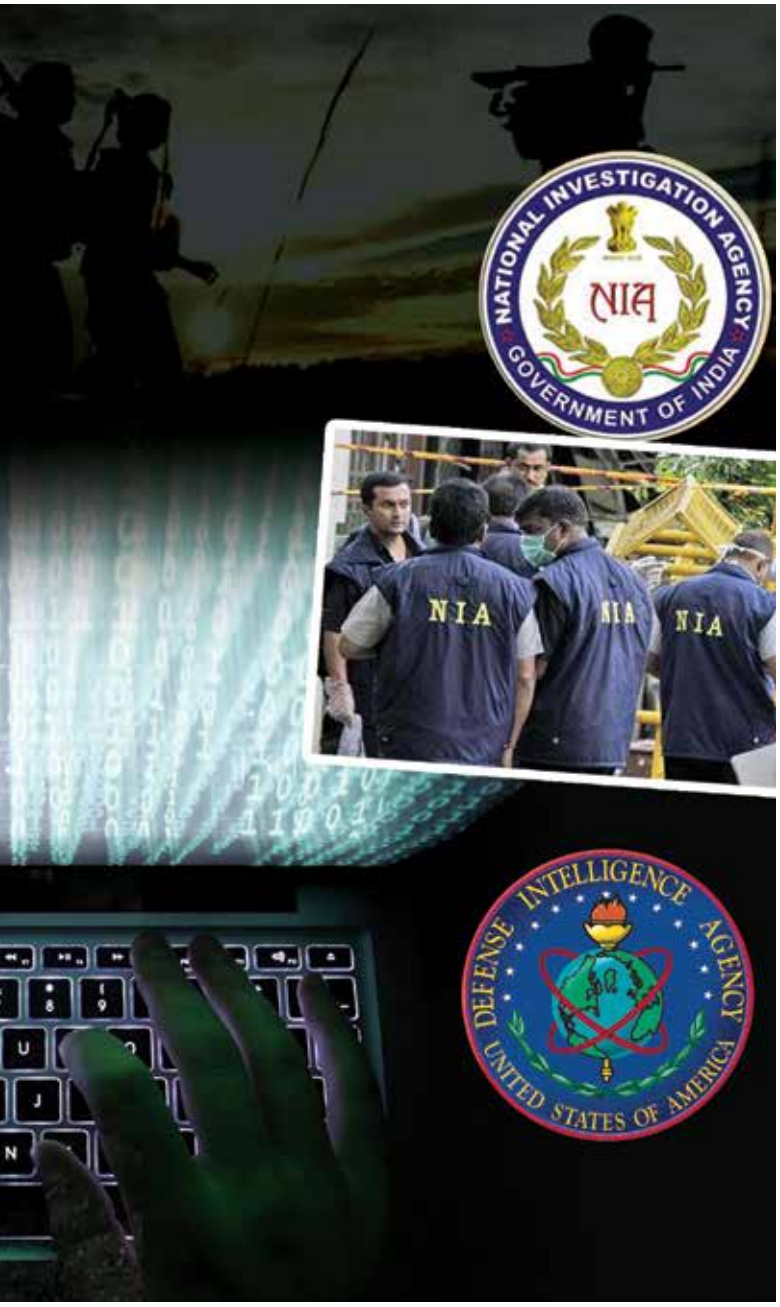
The craft of intelligence is a nation's first line of defence and thus the intelligence organs of a state have to be maintained not only in a high state of preparedness, but, by regular institutionalised reviews, improvements in structural reforms as required, tools of intelligence sharpened by technological accretions and adoption of out-of-box *modus operandi* for collection, collation and analysis of information and intelligence ensured.

Contemporary Security Challenges

The definition of security in today's world embraces challenges beyond the military and terrorism and, includes not only defence but economic, political, social, energy, demographic, technological threats to a nation's existence.

Located in easily one of the most violent, politically unstable regions of the world, India is also surrounded by some not so friendly neighbours. India's strategic horizon extends from the Gulf of Aden in the west to the Malacca Straits in the east. In addition, India's land borders exceed 15,000 km and a coastline that is 7,683 km long with an Exclusive Economic Zone of over two million sq km in size.

Among the specific diverse security challenges India confronts, current and in the foreseeable future, are likely from a rising and assertive China spreading its influence all around our periphery and along India's areas of strategic interest; a treacherous and terror exporting, nuclear capable Pakistan which is pathologically anti-India; indigenous and externally sustained insurgencies in J&K and some of our Northeast states; Left Wing Extremism in our hinterland; communication and cyber space challenges; threats to our energy resources; communal flare-ups; nuclear and space threats; financial laundering; narco-terrorism *et al.*



Not only threats along India's vast coastline but the growing maritime rivalry between China and India in the strategic Asia Pacific maritime commons will only multiply as one of grave security concern. In addition, the likes of Islamic terror groups Al Qaeda and now the Islamic State, whose evil spread is inexorably approaching our frontiers will, in all probability, be a severe challenge to India in the years ahead. Terror threats from Pakistan based and supported non-state actors like the Let, JeM, HuM and a few others are likely to intensify.

It will be amply clear from the above mentioned diverse security challenges to India, that our intelligence organisations have more than an exacting task ahead to forewarn the nation to successfully thwart threats to India's integrity and well-being. Accordingly, their preparedness to adequately fulfill their onerous responsibilities needs constant monitoring and capability improvements in all the nuances of intelligence gathering and analysis.

Lt Gen Kamal Davar PVSM, AVSM (Retd)

The writer is a distinguished soldier having served in all theatres of operations in his 41 years of service. Has been Chief of Staff of a Corps HQ in Jammu and Kashmir and then as GOC 11 Corps responsible for the defence of Punjab. He was especially selected by the government of India to raise the Defence Intelligence Agency after the Kargil War. After retirement he writes and lectures on security issues. He is widely known to passionately espouse the cause of jointness in the Indian Armed Forces. As the first DG, DIA, many intelligence initiatives including abroad were taken by him.

Important Benchmarks

Post-independence, a few efforts by successive governments have indeed been institutionally made to review India's intelligence apparatus and some restructuring implemented. Among the defining moments in Indian Intelligence, the most significant one has been the establishment of the Research and Analysis Wing (R&AW) in September 1968 as an aftermath of the lessons learnt in the 1962 operations against China and the 1965 War against Pakistan for external intelligence gathering functions. In fact, after the 1962 fiasco, a review of the performance of the Intelligence Bureau (IB) led to the creation of the Directorate General of Security, which was subsequently taken away from the IB, placed under the control of the R&AW which thence became the exclusive external intelligence gathering agency.

The second most significant step in the evolution of Indian Intelligence has been fallout of the Kargil War in 1999 when the nation was caught unawares owing to the non-detection of major Pakistani intrusions along the Line of Control in the Kargil sector in Ladakh. The Kargil crisis resulted in a much required comprehensive review

of India's higher defence management and security architecture including grossly warranted intelligence reforms. The then Vajpayee government had constituted the Kargil Review Committee (KRC) under the eminent security analyst, K Subrahmanyam, who subsequently presented his findings on all aspects of security to the government. The government formed a high level Group of Ministers (GoM) to vet the KRC report by constituting four task forces on various matters pertaining to national security. The Task Force on Intelligence was headed by ex R&AW chief, Gary Saxena, which made significant recommendations to revamp the Indian Intelligence apparatus.

The KRC had pointed out that " ... there is no institutionalised mechanism for coordination or objective oriented interaction between Intelligence agencies and consumers at different levels." This committee also noted that " ... there is a general lack of awareness of the critical importance and the need for assessment at all levels. Joint Intelligence Committee (JIC) reports don't receive the attention they deserve at the political and bureaucratic levels. The assessment process has been downgraded in importance."

Acute Need For Synergy

As regards the systemic shortcomings in India's Intelligence structures and functioning, most Indian security analysts are on the same page. They opine that Intelligence coordination between the various agencies is lacking including between the R&AW and IB, the IB and State Police and between the civil and military intelligence agencies. Intelligence gaps have led to glaring national failures preceding the Kargil conflict, during the Mumbai blasts in 2008 and in Pak-sponsored terror activities in J&K and the Indian hinterland for LWE counter operations. It requires no emphasis to state that effective coordination by various agencies presents to the decision-makers a useful collage to further act on.

Indian Intelligence agencies should function under some form of parliamentary oversight and scrutiny

The Gary Saxena Task Force had recommended the establishment of an inter-Services apex intelligence agency, namely the Defence Intelligence Agency (DIA) to synergise all matters pertaining to defence Intelligence and coordinate the functioning of the Intelligence directorates of Army, Navy and Air Force, besides taking under its wings, all strategic Intelligence assets of the three Services, namely in signals and imagery intelligence. This Task Force also recommended the creation of the National Technical Facilities Organisation (later rechristened as National Technical Research Organisation, viz NTRO) to coordinate all aspects of technical intelligence at the national level. The Saxena Committee also called for a Multi-Agency Centre (MAC) and a Joint Task Force on Intelligence (JTFI) to be set up under the IB. The MAC was to collect and coordinate terrorism related information and the JTFI to share information with the state governments. The then government approved on 11 May 2001 all these recommendations submitted to it through the high-powered LK Advani-led GoM. The GoM report had rightly concluded that it was 'neither healthy nor prudent' to endow, notably R&AW, with 'multifarious capabilities' for both human Intelligence (HUMINT) and technical Intelligence (TECHINT) responsibilities. The DIA also was established accordingly on 5 March 2002 – the writer of this article was given the honour to raise it.

It is pertinent to mention here that following the dastardly Pak inspired 26/11 terrorist attack in Mumbai, the Government of Maharashtra had established the Ram Pradhan Committee to go into various aspects of countering terror and streamlining governmental responses for similar terror attacks. This led to the UPA government at the Centre redefining the role of the National Security Council Secretariat (NSCS) and the JIC. The JIC focuses more on short-term intelligence inputs predominantly related to terrorism while the NSCS has reverted to in-depth policy oriented analysis relating to Intelligence and national security priorities. The MAC was also designated as the nodal agency for Intelligence sharing and to formulate responses to terrorism related incidents. Subsidiary Multi-Agency Centers (SMACs) were also established at the state level.

National Investigation Agency

In addition, the UPA government, following the Mumbai terror attack, also announced the setting up of the National Counter Terrorism Centre (NCTC) and the National Intelligence Grid (NATGRID). Owing to differences in professional opinions, the former never got to be established while the latter was raised but its functioning, according to many experts, still requires further improvement. However, the National Investigation Agency (NIA), set up by the UPA government for enhancing its investigative apparatus on terror related matters is working well and fully functional by now. It is the only federal agency chartered to supersede the state police in investigations and also prosecute people for particular offences, as required.

In June 2011, the UPA 2 government had constituted a task force, under former cabinet secretary Naresh Chandra, to carry out a holistic review of the nation's security preparedness. This committee had recommended the creation of a new post of Intelligence Adviser to assist the National Security Adviser (NSA) and the National Intelligence Board on matters relating to coordination in the functioning of various Intelligence agencies.

Civil-military Coordination

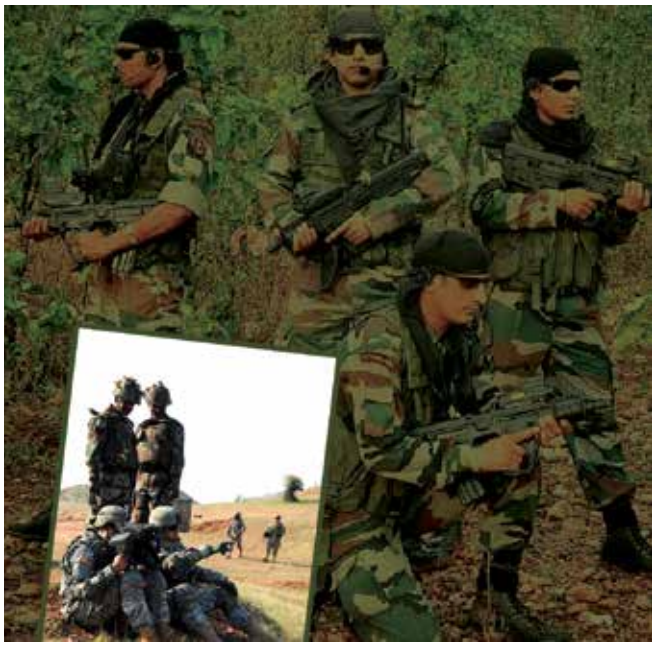
As security challenges to the nation multiply in their form and formidability, it is imperative for the Intelligence organs of India to be well ahead of all these

traditional and newer threats. Some measures to re-energise Indian Intelligence are suggested below.

- It will be prudent on part of the government to carry out periodic institutionalised reviews holistically on all aspects of the security of the nation including Intelligence preparedness to counter all emerging and myriad threats to the nation. On the lines of periodic governmental pay commissions, such reviews should be conducted and improvements, as desired, speedily implemented.
- The NSA is currently overburdened with diverse geopolitical, external and internal security and strategic responsibilities. Thus it is advisable that a post of National Intelligence Coordinator should be created to assist the government/NSA. He/she could be called the Director of National Intelligence and synergise and coordinate the functioning of all civil and military agencies in the nation. This office should provide requisite integrated inputs to not only the PMO/NSA but to all ministries of the government, the Services HQ and the respective states.
- By parliamentary approval, Intelligence agencies must be provided a legal framework for their existence and functioning. Currently, only the NIA has the legal sanction.
- With India being a practicing democracy, it is only proper that Indian Intelligence agencies function under some form of parliamentary oversight and scrutiny. It is suggested that an apex level oversight board could be headed by the Vice President and include members like the Prime Minister, Speaker *Lok Sabha*, Home Minister, Defence Minister and, importantly, also the leaders of Opposition in the *Lok Sabha* and *Rajya Sabha* respectively.

Notwithstanding major advances in TECHINT HUMINT must be substantially improved at all levels

- Notwithstanding major advances in TECHINT gadgetry for intelligence gathering, HUMINT must be substantially improved at all levels. Prevention of terrorist acts is achievable by sound penetrative intelligence and within the Indian Intelligence framework, those chartered must develop adequate covert action capabilities to prevent enemy mischief and forewarn our organisations against impending trouble .
- With revolutionary technical advancements taking place all over the world, Indian TECHINT assets including in imagery, must continually be improved with induction of the state-of-the-art equipment. The challenges in cyberspace from enemy nations have to be adequately matched. China has the enviable reputation to hack /electronically paralyse even advanced networks all over the globe – a threat which Indian intelligence agencies must take seriously and, develop both defensive and offensive cyber-warfare capabilities. The Armed Forces should speedily establish a Cyber Command for this purpose.
- An area of weakness among our Intelligence agencies is the shortage of suitable personnel in linguistic skills. Thus training, in requisite numbers, of personnel in local languages/dialects of the



subcontinent and of countries of our interest must be given its due importance.

- The government must implement with alacrity, long awaited police reforms, to accord to the state police forces and personnel of the central police organisations better professionalism, modern equipment, the requisite welfare measures for in most of the LWE/local insurgency afflicted states, police personnel at the grass-roots level have to be suitably trained and well-motivated to carry out their tasks effectively. As is known, maximum number of Intelligence personnel, at the lower levels are drawn from state police forces.
- Overall, the government must take a holistic view on the recruitment pattern for Intelligence personnel and subsequently their training and career progression. It is high time that Indian Intelligence discards the old imperial culture and functioning ethos of the pre-independence British colonial police.
- In addition, Intelligence agencies must avoid turf battles, work professionally retaining an apolitical ethos in their functioning and share their inputs with other sister agencies seamlessly and unselfishly in larger national interest.
- Officers and junior personnel from Intelligence agencies must be cross-posted, in larger numbers to each other's organisations to ensure better integration and professional cooperation.
- The ever increasing, formidable and myriad security challenges to the nation can only be met by synergetic Intelligence endeavour. The art and science of Intelligence can be effectively employed as a force multiplier not only to thwart the enemies of the state but in the promotion of its core interests, far beyond security matters. Thus India must accord to this useful tool the desired significance in its national priorities. DSA

एयर चीफ मार्शल अरूप राहा
पविसेमे अविसेमे वामे एडीसी
Air Chief Marshal Arup Raha
PVSM AVSM VM ADC

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वायु सेना मुख्यालय
नई दिल्ली-110106
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MESSAGE

The Indian Air Force is celebrating its 83rd anniversary on 08 Oct 15. Living up to its motto, 'Touch the Sky with Glory', the IAF has been a stellar guardian of the Nation's skies ever since its inception in 1932. Perennial churning of radars and ceaseless vigilance by air-warriors is an uncompromising requirement to keep our airspace secure. Be it guarding National Frontiers or responding in the hour of humanitarian crises, the IAF continues to serve with pride and distinction. It is therefore said that while the IAF is 'Exclusive by Profession' it remains totally 'Inclusive in Service to the Nation'.

The heroic deeds of our gallant predecessors have left their footprints in the annals of history and they will always be remembered by our Nation with a sense of gratitude. Building upon the strong foundation laid by our founding fathers, generations of visionaries have propelled the IAF 'Ever Forward' in its path towards becoming a capable and potent Air Force.

This year, we have commemorated the heroism of our legends on the fiftieth anniversary of the 1965 Conflict. We were indeed privileged to have done so in the benign presence of Marshal of the Air Force Arjan Singh DFC, who so ably led the IAF as its Chief during the Conflict. The Indian Air Force salutes the bravery of its heroes and martyrs.

The IAF has evolved considerably, and can look back with justified pride and satisfaction at its achievements over the last 83 years. The demands of sustaining operational readiness are unrelenting. With diverse operating terrain, climatic conditions and vast air space to defend, the IAF trains its air-warriors to meet any contingency.

By consistently displaying exemplary response, courage and professionalism, our Service has earned accolades, both within India as well as abroad.

The IAF's ability to respond swiftly and surely to calls of Humanitarian Assistance has been put to test on several occasions in the past year. Be it airlift of 200 tonnes of drinking water to the Maldives, evacuation of Indian and foreign nationals from Yemen or the response to the earthquake in Nepal, IAF ensured that it has been at the forefront of our National response.

Our Air Force has embarked upon a systematic and phased process of modernisation to meet the requirements of the 21st century. As with any such endeavour, IAF has laid due emphasis in ensuring that our training methodologies and wherewithal are shaped to operationalise these potent weapons and weapon-enabling systems. We are duly supported in our efforts by the domestic industry, which stands ready to be a greater participant in strengthening our indigenous capability as part of the "Make in India" vision.

On the 83rd anniversary, I would like to assure our countrymen that the IAF stands ever ready to safeguard our territorial integrity with a high degree of operational preparedness. IAF extends its whole-hearted support to the Nation's march towards progress and prosperity.

DSA Magazine has played a stellar role in promoting public awareness about the Indian Armed Forces and in highlighting the achievements of IAF through an array of well researched publications. On behalf of all air-warriors, I compliment the DSA team for the special issue on Air Force Day and wish them success in all their future endeavours.

Jai Hind !

Air Chief Marshal
Chief of the Air Staff

01 Oct 15

BD SHARMA IPS
DIRECTOR GENERAL
SASHASTRA SEEMA BAL

Born in Churu District of Rajasthan in 1957, Banshi Dhar Sharma joined the Indian Police Service in 1980 and was allotted West Bengal cadre. He has done his MSc in Botany and taught Botany in Government Colleges of Rajasthan before joining the Indian Police Service.

During his 35 years in Indian Police Service, he has held a number of important charges in West Bengal Police including Addl SP, Barrackpore, Superintendent of Police, Murshidabad and South-24 Parganas Districts and Dy Commissioner of Kolkata Police. He worked in Border Security Force as DIG at Jaisalmer and IG in Jammu and Kashmir, both the assignments on Indo-Pak border from the year 2000-2005. On return to his cadre, he was posted as Inspector General of Correctional Services, West Bengal for five and a half years in which capacity he was the Head of all prisons in the State of West Bengal.

As the Head of Prisons of West Bengal State, he took a number of path-breaking initiatives. The 'Culture Therapy' for transformation of inmates in correctional homes by exploring their hidden talents and imparting them with human dignity through public performances and exhibitions of their talents, introduced by him is a unique concept in which prisoners are given training in music, dance, theatre, recitation, painting and sculpture to showcase their talent before public leading to their psychological uplift. A documentary made by the film director Avijit Dasgupta on the concept of 'Culture Therapy', has won 11 International Awards including the prestigious Golden Gate Award in 2009 and 2010. A popular feature film 'Muktadhara', was based on the concept.

The prisoners of West Bengal have since been performing theatre and dance dramas all over India including New Delhi, Mumbai, Bangalore, Ranchi, Bhubaneswar and raising money for Prisoners' Welfare Fund, established by him. The prisoners have so far raised more than ₹ 70,00,000 (Rupees Seventy Lakh) through more than 200 such public performances all over the country. The Fund is now being utilised for education of prisoners, their rehabilitation, grant of scholarship to prisoners' meritorious children, monetary assistance of ₹ 5,000 at the time of wedding of prisoners' daughters and for organising cultural programmes and sports inside the correctional homes for the inmates. He introduced telephones for prisoners for the first time in India which is now being emulated in other States.

On return to the Centre on deputation, he worked as Special Director General incharge of Eastern Command, BSF, Kolkata from 28.05.2012 to 13.08.2014. During this tenure, he started another humanitarian project 'Darpan' in partnership with NGOs for cleft-lip surgeries of poor children from the border areas of West Bengal, Assam, Tripura and Meghalaya. More than 500 cleft-lip surgeries have since been performed to help the border population.

A recipient of Police Medal for Meritorious Service (1997) and President's Police Medal for Distinguished Service (2002), he was also felicitated in 2013 by Government of India "in recognition of his tireless pursuit of excellence, outstanding commitment in upholding human values and contribution in furthering cooperation between border guarding forces of India and Bangladesh".

BD Sharma is currently posted as Director General, Sashastra Seema Bal (SSB). As Director General, SSB, he took personal initiative to implement various Governmental schemes viz 'Pradhan Mantri Jan Dhan Yojna', adoption of Government schools for all-round development of these schools including construction of toilets with running water under 'Swachh Bharat Abhiyan', cleft-lip surgeries of poor children from border areas with the help of 'Smile Train' (NGO) and launching of Toll-free number (1903) for members of public to lodge complaints about corruption, inappropriate behaviour of SSB personnel or giving information about smuggling, transborder crimes and trafficking etc to SSB.

Celebrating 6th Anniversary

The front cover is top quality & eye catching. The issues the magazine addresses are live and current. Inside, the reportage is classy & not wishy washy, thank the Lord. Articles & interviews are credible & candid. Photos are top quality. What more can one ask for? All in all, dealing with DSA is a pleasant and educative experience. I would definitely recommend DSA to all students of national security.

Air Chief Marshal PV Naik (Retd)
Former Chief of Air Staff
Indian Air Force

My very first piece for DSA was on the Indian Air Force and when I saw my writing in print and received a PDF copy it left me hugely impressed. Excellent formatting, superb selection of pictures to accompany the article with the right blurbs and headings done by the editorial team. The choice of stories to highlight the selected theme is the USP of DSA and this impression gets embedded with each issue. The last one on Indo-Pak Conflict 1965 puts the stamp beyond excellence especially the collection of writers. It is a pleasure to be writing for a defence affairs magazine which is committed to the affairs of the defence community with such exceptional devotion. May the magazine go from strength to strength.

Lt Gen Ata Hasnain (Retd)
Former GOC in C, Northern Command and Military Secretary of the Indian Army

My very best wishes to "Defence and Security Alert" on the occasion of its Sixth Anniversary. With its focus on security issues and defence technology it has matured into a publication that provides valuable insights and balanced assessments on these vital aspects of national importance.

Padma Bhushan Lt Gen Satish Nambiar (Retd)
Former Deputy Chief of the Army Staff
Indian Army

The journal highlights a wide range of issues of extreme urgency and relevance to the nation's security.

Vikram Sood
Former Director, R&AW

सुरेन्द्र सिंह, भा.पु.से.
Surender Singh, IPS

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D.O.No.E-42099/CISF/PRC/DSA/2015- 547 Dated: 24 September, 2015.

I am happy to note that **Defence and Security Alert** magazine will be publishing its **Sixth Anniversary** edition in the month of October-2015. The entire team behind the publication of **Defence and Security Alert** deserves appreciation for their endeavour in establishing the **DSA** amongst the leading defence and security journals within a very short span of time. The contents and layout of the DSA magazine itself bears ample testimony to its level and standard.

DSA has, of late, become a well recognised platform to showcase various issues of national strategic concern. It has also proved to be quite informative about the emerging technology available in the field of defence & security in the rapidly changing scenario with emphasis on the latest technological innovations.

The magazine especially provides a broad perspective to the officers of uniformed services posted in the field on security and strategical issues. The professional concerns of the defence forces, the Central Armed Police Forces and the Police Organisations of the country reflected in the magazine have indeed been contemporaneous and praiseworthy.

I wish the DSA many more glorious milestones in the days to come.

(Surender Singh)

Ms Mamta Jain
Head : Corporate Communications
Defence and Security Alert
Prabhat Prakashan Tower, 4/19 Asaf Ali Road,
New Delhi - 110002

I have been an avid follower of DSA ever since its launch. In my opinion DSA is an outstanding journal which is well laid out, with well researched, objective and analytical articles. It has contributed immensely to strategic thought process in India and the region. The subjects chosen for each issue are diverse, yet topical and relevant to a resurgent India. The cross section of distinguished authors who write for DSA are well regarded thought leaders and are eminently readable. I wish much success to DSA in the coming years.

Lt Gen Sudhir Sharma (Retd)
Chairman
Mitkat Advisory Services Pvt Ltd

What impressed me most was the presentation of a very high standard. I wish a great success to your Journal in future.

Col Naresh Rastogi (Retd)
War Veteran
1965 and 1971 Indo-Pak Wars

FRAGRANCE OF GOODWILL

Over the past six years 'Defence and Security Alert' (DSA) has grown steadily in terms not only of circulation but, more importantly, in the breadth of subjects explored and diverse range of its author-contributors. Today, each issue of DSA magazine examines diplomatic, strategic, foreign policy and defence issues in depth. The articles are invariably written by experts and former practitioners in the specific field, which is what gives DSA the edge over other publications! Congratulations to the Publisher, Editors and editorial team for maintaining such high standards. I am confident the magazine will continue to be eagerly sought and I wish it greater success in the years to come.

Jayadeva Ranade
Founding Trustee, President and CEO
Centre for China Analysis and Strategy (CCAS)

One of the few Defence and Security magazines which in a short time frame of 6 years has established itself as an incisive, intellectually stimulating and progressive script. I have observed the steep escalator that it has scaled with focused approach to issues which they intend highlighting every time that they go to print. It goes into aspects of economics of security and intricacies which is a must in developing democracies like India.

Vice Admiral Shekhar Sinha (Retd)
Former Western Navy Command Chief
Indian Navy

देवेन्द्र कुमार पाठक, भा.पु.से.
Devendra Kumar Pathak, IPS

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15th September'2015

It gives me immense pleasure to forward this note for **Defence and Security Alert (DSA) magazine** which is committed to defence and security trends worldwide. Being a regular reader, I find this magazine very informative and unique in terms of security related issues and subjects. The magazine also keeps a close eye on improved technologies and in depth knowledge of various equipments and gadgets. Matters related to modernization of the Indian Para Military Forces and Security Forces are very interesting and research based.

2. DSA is celebrating their sixth anniversary and I wish its continued success for the future.

With Regards.

Yours Sincerely,

(D K PATHAK)

Shri Pawan Agrawal
CEO
Defence and Security Alert Magazine

Its gives me immense pleasure and satisfaction to know Defence and Security Alert is completing its Sixth Year in October 2015. With India being the largest importer of Defence Goods with fastest growing economy and one of the largest economy that can actually pay for the products, there are bound to be enormous pressures to maintain status quo. The growing number of defence related publications that focuses on this defence sector is an indication of this. It is heartening to see that despite the pressures, Defence and Security Alert magazine has maintained a credible space with its well-researched articles that are of utmost importance in external defence, internal problems and to maintain peace and harmony both in the borders and within the country. I am sure with its dedicated team of professionals supporting and contributing to such articles; DSA will reach greater heights and act as a catalyst to ensure the campaign launched by the Government through "Make in India", "Made in India" and to reverse from the world's largest importer to exporter of defence goods. I wish all success to ***DSA*** and its team in all its future endeavours.

Dr S Radhakrishnan
Director, Directorate of Industry Interface & Technology Management DRDO

Celebrating 6th Anniversary

Congratulations Team DSA on the sixth anniversary! In a short span of time, the Journal has made a significant contribution to thinking on important issues pertaining to national security. I am sure DSA will rise to greater heights in the years ahead. My best wishes for Team DSA.

Brig Gurmeet Kanwal (Retd)
Founding Member
FSI and SAISA

Defence & Security Alert magazine will always have a special place in my heart. The magazine has published many articles by stalwarts in the field of defence and security. What makes this magazine very appealing is the combination of aesthetics, layout and the content. I feel proud to be a subscriber of this wonderful magazine. Looking forward to more good work from DSA!

Uma Sudhindra
Current Affairs Analyst and Social Entrepreneur

DSA as an informative defence and security magazine has done commendable work during all these years. It has generated interest among the general readers as well as practitioners through its lucid language and well researched articles. The selection of topics for each issue has been very topical and any reader who has been regularly reading the articles in DSA would concur with the opinion. The layout of the DSA and its exceptional use of graphics have made the content more enriched. My best wishes for DSA for future and it should continue this work of informing the public and generating those debates which are relevant for national interest.

Dr Pankaj Jha
Director Research
Indian Council of World Affairs

कृष्ण चौधरी, भा.पु.से.

Krishna Chaudhary, IPS

यह जान कर प्रसन्नता हुई कि डिफेन्स और सिक्यूरिटी एलर्ट मैगजीन अपनी 6ठी वर्षगाँठ पर विशेषांक निकालने वाला है।

2. Defense and Security Alert is a unique magazine in that it focuses on the security concerns of our nation and has recently increased its focus on the Central Armed Police Forces. I do wish they would also spread their cover to the State Police forces which are providing such dedicated service to the nation.

3. An advertisement free initiative of Prabhat Prakashan, it makes for good, informative reading.

4. I wish the special edition all success. विशेषांक के लिये मेरी हार्दिक शुभकामनाएं।

14/09/15

(कृष्ण चौधरी)
(Krishna Chaudhary)
दिनांक 14 सितम्बर, 2015

DSA has evolved into a no frills and uncluttered periodical which provides an even platform and accommodates all stakeholders for presentation of factual and analytical writes on Defence and Security issues. The themes are thoughtfully chosen to align with important and relevant subjects, matters and concerns affecting policymaking, advocacy and activity in the national, international and global perspectives. The presentation, format, layout and content design is simple and effective and uncluttered by too many large adverts and widgets to allow for an unspoiled reading experience.The magazine is highly recommended as a dependable source for knowledge and in-depth analyses on Defence and Security for the civic community, serving officers, industry, academic institutes, government officials and policy makers and the international professionals.

Cdr Sunil Chauhan
Director Business Development
Indra Sistemas SA

FRAGRANCE OF GOODWILL

TESTIMONIALS

Lt Gen Shokin Chauhan, YSM, SM,VSM
Additional Director General Public Information

Additional Directorate General
Public Information
General Staff Branch
Integrated HQ of MoD (Army)
B-10, South Block
New Delhi - 110011

A/81008/DO/M/PI

21 Sep 2015

Mrs Mamta Jain
Head-Corporate Communication
Defence and Security Alert

LETTER OF APPRECIATION

1. The issue of Defence and Security Alert on the 1965 war in August 2015 is appreciated.

2. I wish your magazine all success.

बंशी धर शर्मा, भा.पु.से.
महानिदेशक
B. D. Sharma, IPS
Director General

SSB

SASHASTRA SEEMA BAL
Ministry of Home Affairs, Govt. of India
East Block-V, Sector-1, R. K. Puram,
New Delhi - 110066
Phone : 011-26198200, Fax : 011-26178477

LETTER OF APPRECIATION

It is indeed a matter of pride that **'Defence and Security Alert'** magazine is publishing its **6th Anniversary Edition** in the month of October, 2015.

2. The **'Defence and Security Alert'** magazine has meticulously been covering all the important subjects of the current security scenario of the country from time to time and I find all of them very informative and knowledgeable. I would like to take this opportunity to convey my deep appreciation to you for the same. I am confident that the magazine will continue to respond to the new challenges and opportunities with the same vigour and determination and set higher standards of excellence in future.

3. On this momentous occasion, I, on behalf of **'Sashastra Seema Bal'** and my own behalf extend warm greetings and felicitations to the entire team of DSA and wish them many more glorious milestones in days to come.

06.10.2015
(Bansbi Dhar Sharma)

The strategic thinking in India is largely limited to a select group of government officials, analysts, think tanks and media persons, largely because of lack of credible information about matters related to defence and security of the country. The limited public discourse on these matters often lacks objectivity because of this constraint. Defence & Security Alert (DSA) has been doing an extremely commendable job in filling this void by providing to its readers reliable information on current developments and dispassionate analyses of the events by experts of acknowledged standing. The get up of the journal is catchy and its presentation so lucid as to invariably hold the reader's interest from cover to cover. The publishers and its editorial board deserve compliments for maintaining a high journalistic standard and delightful simplicity in covering issues of national interest.

Amit Cowshish
Former Financial Adviser (Acquisition)
Ministry of Defence and
Distinguished Fellow, IDSA

ओ.पी. सिंह, भा.पु.से.
महानिदेशक
O.P. Singh, IPS
Director General

राष्ट्रीय आपदा मोचन बल
(गृह मंत्रालय)

National Disaster Response Force
(Ministry of Home Affairs)

No.I.17018/PS NDRF/2015 Dated, the 15th September, 2015

Dear Shri Singh,

Being a Police Officer and Chief of the NDRF, I have a natural leaning towards Defence Security Alert Magazine. It is a next generation magazine which provides opportunity to its readers to have a broader view on national security in the present scenario. This magazine is not exclusively meant for security officials only, but it throws light on armed forces, para-military & police organizations, Political leadership, common people and the other security agencies who deals with defence and security affairs.

I sincerely applaud the valuable efforts of the publisher of this magazine and extend my wishes for bright future and ever-increasing popularity among its readers.

With best wishes,

Yours sincerely,

(O.P. Singh)

Shri Manvendra Singh,
Editor-in-Chief,
Defence and Security Alert,
4/19, Asif Ali Road,
New Delhi-110002 (INDIA).

It's a matter of immense pride as well as great satisfaction to have finally found a magazine which successfully highlights not only the matters professionally military but also the informal and many other semi-formal issues connected with the Indian Armed Forces in a skillfully balanced, articulate and curt manner thereby enhancing the volume of its readership manifold. The magazine has very effectively brought out certain contemporary issues that have an effective bearing on the present day concerns of the national security. The magazine has also succeeded in generating desired degree of awareness among the people with respect to the operational matters and the changed role that the Indian Armed Forces have started playing by recently having conducted important cross border operations in line with the latest Big Brother posture that India has recently assumed in currently changing regional power equations. My compliments to the entire editorial team of the 'Defence and Security Alert' for having stirred among the populace, an unprecedented concern about the National security and global balance of power evidently pointing to a clear shift in the Indian foreign policy under the present political leadership of the country.

Lt Col Ankita Srivastava (Retd)
Security Officer, SBI

Mobile No.9415218516, 8795254265
Email: drsanjeevbhadauria@gmail.com

University OF Allahabad

DR. SANJEEV BHADAURIA *Professor and Head
Department of Defence & Strategic Studies *Allahabad-211002 India

September 18, 2015

Defence & Security Alert Journal is a sincere and dedicated handiwork of a dedicated team with rich and varied experience in the field of Publications on Defence and Security issues. The publication is indicative of a serious and diligent effort at producing quality published work. As a quality publication, **DSA** has exhibited good understanding of the needs of the target readers by managing to produce articles with sound reasoning and logical and meaningful conclusions which is worth appreciating.

The Editorial team's vision, scholarly acumen, commitment to excellence and resolve to generate an academic milieu is something to admire. **DSA** has displayed above average literary content, comprehension and analytical skills on the one hand while contributing to fresh interpretation of facts to the domain of the subject of Defence / Security Studies.

Having watched its progress closely right from the inception, I feel **DSA** has excelled and made a name for itself as a publication of repute. I not only hope but sincerely believe that if it carries on with the same zeal and spirit, it is bound to scale greater heights. I have no doubt that further caps are in pipeline.

I wish Team - DSA well in its future pursuits.

S. Bhadauria
(Sanjeev Bhadauria)

I have gone through a few articles and am immensely impresses with the contents and lay out. I wish all the very best to "DSA" in maintaining the quality of articles and its continuous publication.

Satyajit Mohanty IPS
Addl DG of Police
(Headquarters),Odisha

I have found the magazine quite informative, crisp and sophisticated content wise with excellent updates. It has latest themes and well written articles from esteemed dignitaries from the industry. Your team is giving insights of regulatory developments and also of the industry which is useful for the various stakeholders in the industry. Please do keep sharing the updates.

Nidhi Goyal
Managing Director, Tax and Regulatory Affairs, Protiviti India

National Security in relation to both, internal and external threats, is a complex subject, more so for India, a country with its prime geo-political location, hostile or volatile neighborhood, most diverse ethnicity and vast resources. Defence and security Alert as a professional magazine has been covering diverse aspects of this subject for the past six years. With its balanced articles and up to date information, it has carved out a well-deserved place for itself. I have found DSA magazine to be an excellent journal on matters related to defence and security during my association with the magazine ever since it's very first issue in October 2009. On this occasion of its completing six years, I congratulate the DSA team and wish them a great way ahead.

Ravi Kumar Gupta
Former Director,
Directorate of Public Interface DRDO

FRAGRANCE OF GOODWILL

I have been reading the Defence and Security Alert publications regularly for more than a year and have found that it covers the various topics pertaining to National Security and Defence very comprehensively. The knowledge content of the articles is also significantly better than in many other journals covering this field and the presentation of photographs and layout of the magazine is impressive. It is also heartening to see that the magazine recognizes and applauds the role of women in the Armed Forces by not only featuring them in several of the published issues, but also honouring them with an exclusive issue each year in the month of March. I wish DSA all the best in its future endeavours.

Rear Admiral Nirmala Kannan
Surgeon (Retd), Indian Navy

PRAKASH MISHRA, I.P.S.
Director General
CENTRAL RESERVE POLICE FORCE
Block-1, C.G.O. Complex
Lodhi Road, New Delhi-110003
P: 24360871 Fax : 24363192
Dated, the September, 2015

Dear Shri Agrawal,

I am delighted to learn that Defence and Security Alert (DSA) is bringing out a special edition on the occasion of its 6th Anniversary. The Magazine acts as an information bridge between the otherwise unsung Security Forces and general public by sharing its insight regarding the dedicated service and achievements of these forces. The DSA apprises people about the yeoman service rendered by the Security Forces, such as the CRPF, to the Nation, so that the countrymen could progress in a peaceful and secure environment.

I am confident that the DSA will celebrate many more such anniversaries in future and also wish all the success to its editorial team.

With best Wishes,

Yours Sincerely,

(PRAKASH MISHRA)

Shri Pawan Agrawal,
Publisher and CEO,
Defence and Security Alert
Prabhat Prakashan Tower
4/19, Asaf Ali Road,
New Delhi – 110002.

TESTIMONIALS

DSA Magazine dealing with strategic affairs has produced excellent articles on the strategic environment and thereby contributed to India strategic culture. Best wishes for the future.

Maj Gen PK Chakravorty (Retd)
Former ADG Artillery
Indian Army

Heartiest congratulations to DSA on its 6th Anniversary. During this short period, DSA has achieved remarkable success. I am an ardent reader of the Magazine for almost the entire period. It has achieved an exceptional standard in its writings and Articles in the fields of Strategic Thinking, International Affairs, Military Doctrines, Human Resource Development, and Security Environment in the global as well as neighbourhood scenarios, Modernisation of the Armed Forces and CAPF, and above all, Nation Building. It is an exceptional professional reading and one eagerly looks forward to the monthly edition. Every edition adds something to the value of the Magazine. I wish the magazine greater success and glories in future. I am sure the day is not far off when DSA will be the most sought after magazine amongst the Strategic thinkers for its invaluable thoughts and vision. JAI HIND

Lt Gen Vishnu Kant Chaturvedi (Retd)
Adviser Defence Banking at
State Bank Of India

DSA Magazine is focused on enriching its readers - both active officers of services and veteran defence analysts - with topical content from the battlefield and technological developments that are changing the very nature of war. Its in-depth coverage of cyber is a case in point.

Dr Kamlesh Bajaj
Former Founder Director, CERT-In and
Founder CEO, DSCI

Centre for Air Power Studies

Air Marshal **Vinod Patney** SYSM PVSM AVSM VrC (Retd)
Director General

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My congratulations on the 6th Anniversary of the DSA magazine. Over the years the magazine has gained both stature and recognition. The articles are, almost invariably, topical and informative. The presentation is appealing as well. As a result the magazine appeals to both the professional and the lay reader. I am sure that in the years ahead the magazine circulation will increase and so will the respect it enjoys. I wish the 'DSA family' the best of luck and may you continue to provide good reading material to your many readers. I look forward to the DSA Magazine reaching new heights.

(Vinod Patney)
Air Marshal (Retd)
Director General

14 September 2015

idsa

Institute for Defence Studies and Analyses
No 1, Development Enclave, Rao Tula Ram Marg, Delhi Cantt, New Delhi - 110 010

Brig Rumel Dahiya, SM (Retd)
Deputy Director General

16 September 2015

TO WHOMSOEVER IT MAY CONCERN

Defence and Security Alert has been covering issues related to defence, security and regional geo-politics for last more than five years. I read this magazine regularly to access views expressed by eminent experts and scholars. Each issue draws attention to some new theme and contributes to strategic thinking. I wish the magazine a bright future.

Telephone : (91-11) - 26146832 • Fax : (91-11) - 26154191 • E-mail : ddg.idsa@nic.in

ShinMaywa
Brighten Your Future

Shri Pawan Agrawal
Publisher and CEO
Defence and Security Alert

SMIIPL/1000(4)/2015

2/ Sep 2015

Dear Shri Agrawal

Greetings from ShinMaywa Industries India Private Limited.

1. We have been regular subscribers to the Defence and Security Alert Magazine for past three years.

2. I must compliment you and your able staff for bringing out a highly professional monthly journal on defence and security related issues. The selection of theme and choice of authors has always been very good. The magazine does give a total and unbiased picture of latest developments in the defence sector.

3. I congratulate the entire team of DSA for their hard work and professional attitude and wish them best for the future.

With highest regards,

Sujeet Samaddar
Director and Chief Executive Officer

ShinMaywa Industries India Private Ltd.

FRAGRANCE OF GOODWILL

Captain (Dr.) Gurpreet S Khurana
Indian Navy
Executive Director

National Maritime Foundation

A Message for 'Defence and Security Alert'

The myth of 'India not having a strategic culture' is slowly dissolving. This is amply evident from the changing nature of articulations by our national leaders; the expressions of our strategic community; and national policymaking — all these becoming increasingly proactive, purposeful, poised and pertinent to India's longer-term national interests.

The 'Defence and Security Alert' (DSA) has taken note of this change, and is making a seminal contribution to it in more ways than one. It is effectively acting as a medium for the ongoing discourse on strategic and security issues, and as a platform that showcases the evolution in India's strategic orientation. The special DSA issue of September 2014 covering the 'Role of Indian Think-Tanks in International Security', for instance, was very well conceived. It amply highlighted India's emerging will to play a greater stability and security role in its regional neighbourhood, and beyond.

In the coming years, one could expect the DSA to play a seminal role to enhance public awareness in India on strategic and security affairs, which continues to be a major challenge for our country to attain its manifest destiny.

Date: 18 September 2015

Place: New Delhi

Gurpreet S Khurana, PhD
Captain (Indian Navy)

Lt Gen N C Marwah
PVSM, AVSM (Retired)
Member

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MESSAGE

1. On the occasion of **Sixth Anniversary** of **Defence and Security Alert**, I wish to compliment the Team which has innovatively conceived and improved the layout and content of the magazine over the years. **DSA** covers contemporary Global Security and Strategic issues in most professional manner. In particular, coverage of wide spectrum of subjects and selection of Themes for each of the Issue, ensures that interest of the professional community is kept alive.

2. Considering the rich flavour of the content, I can say that **DSA** has become one of the leading Defence and Security Journals of India in a very short span. I wish DSA and all Members of the Team, continued success and many more laurels in times to come.

New Delhi
14th September, 2015

(Lt Gen N C Marwah (Retd))

DR. MUKTESH CHANDER,IPS

SPECIAL COMMISSIONER OF POLICE (TRAFFIC)
DELHI POLICE HEADQUARTERS
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PH : 23490361 ,23490310 EXTN. : 4212
FAX : 23490342

Dear Shri Agarwal,

I have been a keen reader of 'Defense and Security Alert' (DSA) since its inception. I am glad to know that DSA is bringing out a special edition on the occasion of its 6th Anniversary. The magazine has been a source of knowledge for security forces and general public through its coverage of provoking issues. The DSA has been focusing on topics of both general and special interest, specially covering the services and sacrifices of police, central armed police forces and armed forces.

I am sure that the DSA will continue to grow to glorious heights in future. I also wish DSA and its editorial team great success in all their endeavors.

With best wishes,

Yours sincerely,

(Dr. MUKTESH CHANDER)

Shri Pawan Agrawal,
Publisher and CEO,
Defense and Security Alert
Prabhat Prakashan Tower,
4/19, Asaf Ali Road,
Delhi-110002.

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Celebrating 6th Anniversary

SHIPBUILDING IN INDIA
ROLE OF PUBLIC AND PRIVATE SECTOR

It is to be appreciated that the delays in the ongoing defence shipbuilding is not totally attributable to the PSU yards. The private industries engaged to supply equipment that goes into shipbuilding have not been able to cope with the demand. Quality of these equipment has been found wanting leading to delays in trials and delivery time of ships. If this issue is not addressed by the private players then orders if given to private shipyards will have the same fate. Suffice to say that the defence technical industrial base (DTIB) is not up to the mark and needs to be addressed first.

India has all the ingredients to be a major maritime power. Approximately 90 per cent of the country's trade by volume (70 per cent in terms of value) is moved by sea. India has 7,517 km long coastline studded with 13 major ports and 200 non-major ports. Indian economy is largely dependent on shipping and therefore shipbuilding assumes importance.

Bedrock Capabilities

Indian shipbuilding industry comprises around 27 shipyards which include eight public sector and 19 private sector yards. These shipyards collectively have 20 dry docks and 40 slipways with an estimated total capacity of over 2,80,000 DWT. Out of the eight PSU yards, four operate under Ministry of Defence (Department of Defence Production) and are primarily engaged in warship and submarine building for Indian Navy and Indian Coast Guard. These are Mazagon Dock Limited (MDL), Mumbai, Garden Reach Shipbuilders and Engineers (GRSE), Kolkata, Goa Shipyard Limited (GSL) Goa and Hindustan Shipyard Limited (HSL), Visakhapatnam. Of these HSL is a new entrant which was transferred from Ministry of Shipping to MoD in Feb 2010. Balance PSU shipyards are under administrative control of Ministry of Shipping. The largest among them being Cochin Shipyard Limited (CSL) with an installed capacity of 1,10,000 DWT.

In the private sector, the largest shipyard is at Pipavav near Bhavnagar in Gujarat, with a capacity of 75,000 DWT. The other prominent private sector shipyards are L&T shipyards at Hazira (near Surat) and Kuttupally in Tamil Nadu, ABG at Dahej and Surat and Bharti Shipyard at Dhabol in Ratnagiri district of Maharashtra.

Most private sector shipyards are engaged in building medium and small vessels such as Offshore Supply Vessels (OSVs) and Anchor Handling Tugs (AHTs) etc. In large ship segment, public sector shipyards, CSL and HSL, virtually hold monopoly. Private players such as Pipavav and L&T have made huge investments for construction of large vessels. The DPSU shipyards are primarily engaged in building high value, niche segment warships and submarines of highly complex design, with MDL and GRSE in the forefront.

Recession In Shipping Industry

The Baltic Dry Index, a gauge of global shipping rates is a leading economic indicator and had peaked to 11,793 in May 2008. Following global recession, the index touched an all-time low of 509. During July 2015 the index improved to 1,000 but again slumped to 994 in the aftermath of the China meltdown in August 2015. This clearly indicates that the recession in shipping is not yet over and may take some more time. In the intervening period of almost six years, shipbuilding industry has been hit hard. Indian shipbuilding has also been adversely affected.

Prior recession of 2008, the Indian shipbuilding industry took full advantage of the subsidy scheme provided by the government during the global boom period. However, despite making rapid strides over the past decade, the industry is heavily dependent on government support for subsidies due to infrastructure constraints of Indian yards. With the discontinuance of the subsidy scheme in the eleventh Five Year Plan and no further announcement for the renewal of the said scheme, it has become difficult for the industry to stay cost-effective. Already, it is facing troubled times due to the economic slowdown and high operating costs. However, subsidy support is not a permanent panacea for making the industry globally competitive and enabling it to garner a sizeable market share. The industry requires an integrated policy initiative by the government for its revival. Presently, the domestic shipbuilding industry is subject to various duties, taxes and levies. Comparatively, several shipbuilding nations have relaxed or reduced these levies to encourage shipyards. Additionally, the global shipyards enjoy subsidies, research grants and also the benefit of a very low rate of taxation. The differential rate of duties and taxes between India and other countries puts India at a cost disadvantage to the extent of 30-40 per cent. The present fiscal and statutory rules on shipbuilding in the country are heavily loaded in favour of import and discourage construction of ships by Indian yards for Indian companies.

Rear Adm NK Mishra NM, IN (Retd)

The writer is Chairman and Managing Director of Hindustan Shipyard Limited.

To make Indian shipbuilding globally competitive, following taxes need a relook:

- Excise duty @ 5 per cent plus 3 per cent cess totalling 5.15 per cent on domestic sale of ships.
- Excise duty of 16 per cent for procurement of capital goods, raw materials, equipment and components for shipbuilding.
- Customs duty @ 10 per cent (Basic Duty). Additional Duty, Countervailing Duty and Cess make the total duty of 26.85 per cent applicable on the capital items imported for shipbuilding works.
- Value Added Tax (State VAT) on indigenous sale of ships as applicable in the States.
- 14 per cent service tax for ship repairs.

Demand For Reintroduction Of Subsidies

The above factors make Indian shipbuilding incompetitive in the world market and it is not a surprise that our global shipbuilding share is nowhere in the reckoning. There is thus a need for reintroduction of subsidy and rationalisation of certain taxes and customs procedures to give the shipbuilding industry the competitive edge. The industry should also be granted infrastructure status.

In this backdrop, the private shipyards did not have meaningful orders while the DPSU yards continued to have defence shipbuilding orders primarily through nomination. For whatever reasons, the delays in the delivery of warships by DPSU yards have been accentuated by the private players and a claim was made that their capacities could address the issues of delayed warship projects in India. The private shipyards and private manufacturing industries also called for a 'level playing field'. In my opinion, the field is more uneven for PSU yards with reservation, CVC guidelines for procurements, almost a five tier audit mechanism for transparency and avoidable interference of administrative ministry and other agencies such as CVC, CBI, DOP&T, DPE, Finance ministry and Labour ministry and so on. This aspect has been diluted by the sole fact that PSU yards have more orders and almost all projects are behind schedule.

In many cases there are contradictions in the RFPs issued which take a long time to resolve

Private Sector Unable To Meet Demand

It is to be appreciated that the delays in the ongoing defence shipbuilding is not totally attributable to the PSU yards. The private industries engaged to supply equipment that goes into shipbuilding have not been able to cope with the demand. Quality of these equipment has been found wanting leading to delays in trials and delivery time of ships. If this issue is not addressed by the private players then orders if given to private shipyards will have the same fate. In addition, niche weapon equipment under development are delayed at DRDO and also high value import orders have too many complications and more often than not enter into avoidable legalities. This is a subject by itself. Suffice to say that the defence technical industrial base (DTIB) is not up to the mark and needs to be addressed first.

Stagnating Industry

Rather than strengthening the DTIB, the policy makers (MoD, Navy and ICG) started looking at private shipyards to clear the increasing backlog of shipbuilding projects. At this stage, two major events changed the fate of private shipyards in Defence shipbuilding projects. Firstly, increased requirement of ships for coastal security post November 2008 terrorist attack of Mumbai and secondly the revision of Defence Procurement Policy in 2009 (DPP-2009) which ushered the era of competition and ended orders on nomination. Fixed price contracts replaced the concept of cost plus contracts. It was also expected that involvement of private shipyards would bring in a spirit of healthy competition thereby improving the quality through introduction of latest technologies, bring down prices and also cut down delivery periods through adoption of modular construction.

Contrary to these expectations, there has been no appreciable change. Deliveries of vessels continue to be delayed and also quality has not shown any improvement. In fact, there have hardly been any significant deliveries made by the private shipyards over the last six years except for a few auxiliary vessels.

Unused Potential

Further, with big private players eying the defence shipbuilding market, the commercial shipbuilding has taken a back seat and this should be a cause of major concern. Unfortunately nothing much is being done about it. The merchant marine sector has huge potential with coastal shipping to decongest highways, inland waterway transport and cruise liners etc. However, when compared to profit margins for warships these project would be nowhere in comparison. Just to give one example, whereas a Handymax bulk carrier of about 60,000 DWT today costs around ₹ 200 crore, a much smaller frigate of about 6,000 DWT could be as high as ₹ 9,000 crore. Considering a very conservative profit margin of 5 per cent (₹ 10 crore for a bulk carrier against ₹ 450 crore for a frigate), the labour inputs and build periods, it makes more economic sense to grab a defence order rather than toil hard for a commercial ship order.

Fudging The Books

Shipbuilding orders through competition have brought down the cost drastically. But a closer look at these reduced prices reveals that these are not only unrealistic but also defy logic. In a few recent cases, the contracts have been concluded at costs which were almost 20 per cent lower than the prevailing prices/last built price (about three years ago). With the present foreign exchange rates, in most cases the contractual price does not even cover the material costs. It is logical to conclude that such low costs have been quoted to grab orders out of desperation as otherwise the private shipyards are likely to face closure without orders. One should not lose sight of the fact that almost all private shipyards have severe financial crunch and these predatory prices could at least provide sustenance support. In the present contracting process adequate consideration is not given to shipyard capability, capacity, loading, delivery track record and financial resilience prior placement of orders resulting in a skewed order book position almost exclusively driven by L1 model.

Such a situation is undesirable as this lowers the benchmark price which will come in the way of future procurements. Further, with such low prices the shipyards will not be able to construct the ships and this will adversely affect the force levels of Navy and Coast Guard. This matter assumes great significance for the 4 X LPD Project where two LPDs are to be constructed by one of the private shipyards through competitive bidding process and the balance two by Hindustan Shipyard Ltd on nomination basis at L1 price. Since this is a prestigious high value order sought after by all the three competing private shipyards, namely Pipavav, ABG and L&T, the yards have invested a lot of time and effort to evolve a winning strategy and prepare their bids. Going by the current trend, the final quote is likely to be unrealistically low and unachievable. Such an eventuality would jeopardise the entire LPD project and seriously affect our defence preparedness. The same strategy for construction of submarines *P 75I* will only spell disaster.

As regards defence orders the non-combatants should be given to private players

While the private shipyards tend to quote unrealistically low prices to grab orders as seen from the present trend, some of the blame for improper pricing also rests with the Service Headquarters/owners whose initial cost estimates at AoN stage are unrealistic. In a recent case, the cost estimate at the time of obtaining sanction was less than one third of the final contracted price leading to protracted negotiations delaying the project. Sometimes, such unrealistic pricing also leads to compromise on the SOTRs (technical requirements).

Design Capability Absent

Another issue that plagues defence shipbuilding is the inordinately long time taken for conclusion of contracts. Going by recent examples, it takes almost two years from issue of RFP to conclusion of contract for even a minor auxiliary vessel like a barge or a tug. This is primarily due to the processes involved – pre-bid meeting, TNC, PNC, approvals etc. In many cases there are contradictions in the RFPs issued which take a long time to resolve. The TNC also takes a lot of time as technical offers /design of each of the competing shipyards has to be scrutinised thoroughly and conformity with RFP established. Lack of a strong design department in most shipyards adds on to the delay as many of the technical queries take a long time to answer/clarify. Even after the award of the contract it takes another six months to one year to start construction due to

variety of reasons like availability of steel, approval of drawings as well as other approvals involving owners and classification societies.

One might argue that the answer lies in the private shipyards to create and strengthen their own in-house design and R&D capabilities. This, however, would require huge investments and without assured orders, it does not make economic sense for the financially weak private players to go in for such investments.

Standardisation An Imperative

In order to overcome all these inherent complexities in the Indian Defence shipbuilding, improve delivery timelines and quality and yet maintain reasonable pricing, we need to standardise and identify yard for a particular type of ship. Warships such as carriers, frigates, destroyers, corvettes and submarines, constitute 20 per cent by numbers and balance 80 per cent comprise less potent OPVs, FPVs, Survey Ships, Training Ships, Tankers, Tugs, Barges, Yard Crafts etc. These 80 per cent vessels need to be standardised. Today we have IPVs/FPVs of more than five designs. This could be streamlined and only one design would bring down costs and also compress delivery times. So is the case with OPVs etc.

Above mentioned standardisation, would mean increase in volumes for the selected equipment and the economies of scale would make commercial sense for foreign players for FDI in manufacturing area. This would pave way for the 'Make in India' for maritime sector.

Open source information on Liberty class Ships of World War II vintage and Oliver Hazard Perry class frigates both of US Navy support this idea of standardisation. On the same principle, 18 ferry crafts were built to a standard design developed by National Ship Design & Research Centre (NSDRC), Visakhapatnam for the Andaman & Nicobar Administration by four Indian Shipyards about a decade ago – 10 at HSL, Visakhapatnam, three at Alcock Ashdown, Gujarat, three at Goodwill Yard, Pondicherry and two at Shalimar Yard, Kolkata. Being of a standard design with same equipment fit the engine manufacturer also found it economically attractive to create repair facility at Port Blair to support the 36 engines on the 18 ferries.

Details of how to achieve this standardisation could be brainstormed and a workable solution could be evolved by MoD. Maybe the recent move to create a National Institute of Design (NIRDESH) could be of help in this direction.

Ancilliary Infrastructure

It is time to verify the claims of the private shipyards. It is a fact world-class facilities (yards) have come up in the recent times. These facilities are well suited for merchant ships. None of these new yards have facilities for weapon system integration and required expertise to fit out a weapon intensive platform. Further, a very important point of ecosystem for ship and submarine construction should not be lost sight of. A warship needs visits by foreign vendors, credible industrial support in the vicinity and also communication. The new yards are so located that they do not have hotels, airports and seaports and also good roads. Also, good technicians would be available where their families are supported through avenues for jobs for their family members, quality educational institutes and credible medical facilities etc.

Considering the importance of merchant ships for our own economy the private players should come forward to help the country. As regards defence orders the non-combatants should be given to private players. In this regard, security concerns and risks should be given a serious look.

Hand-holding

Both private and public sector have elaborate facilities:

- With private sector vying for defence orders the national commercial shipbuilding is being neglected. Commercial vessels play an important role in economy of the country and a policy is required to provide hand-holding as in other countries where shipbuilding is a major industry. Shipyards should be nominated and orders placed by SCI, DCI and ONGC etc on Indian yards so that this industry gets a boost.
- As regards warships, there is enough in the plate for both private and DPSU yards. It would be of national interest to categorise yards for specific ship types and nominate these orders. For complex warships and submarines, availability of a credible ecosystem and security concerns should be carefully evaluated. `These should be limited to DPSU yards as the Government has a good control over them.
- The private sector should make efforts to create a credible DTIB. Considering the fact that 70 per cent of shipbuilding project cost caters to equipment alone, this is a huge market and this should be thrust area for 'Make in India'. Shipbuilding is primarily aggregation of equipment on hull built by shipyards.

Designs should be standardised which will cut down on time for technical evaluations and also help capitalise on economies of scale, reduce inventory at repair yards etc. DSA

GRAMMAR OF ANARCHY

Many areas of freedom enjoyed by a citizen of India are denied to a soldier, which is understandable, but an attempt to deny the same to even those who are retired is totally untenable. The former service chiefs, now as ordinary, but responsible citizens of the country took the right step, in the best national interest, to caution and advise the government of dangers that lie ahead.

A national newspaper reminds us that Dr Ambedkar, the principal architect of Indian Constitution, had warned that, 'Grammar of Anarchy', could take over the discourse if careful thought was not given to permissible modes of protest in a constitutional republic. The provocation for this quote from Dr Ambedkar was the letter four former chiefs of defence services wrote to the uncaring Supreme Commander of India's armed forces and the ongoing peaceful protest at Jantar Mantar by the veterans. Obviously it is not only gross misreading and misinterpretation of the intent of Dr Ambedkar's reference to the modes of protest but is reflection of a deep seated prejudice of this paper against the defence services.

Neither Dr Ambedkar nor others involved in the framing of the Indian Constitution wanted to, at any time, take away the most fundamental and democratic right of citizens of this country to stage peaceful protests, for whatever cause. For this newspaper, danger of anarchy gets amplified when these methods (writing a letter and peaceful protest by veterans) are used on behalf of the military. In the case under discussion the editor is grossly wrong as these protests are by the retired and for the retired, who are no more under the stifling restrictions on fundamental rights imposed on those still in military service.

In the considered view of the editor of that newspaper writing of this letter to the Supreme Commander, apprising him of the likely repercussion on his troops, from the ongoing agitation by veterans, in some form, is a 'grammar of anarchy' and part of pressure tactics. On the other hand their failure to let the President know, who otherwise opts to remain quite unaware and perhaps unconcerned of matters military and therefore, the likely repercussions from this treatment of veterans by the government may one day come as a shock to him and his government.

Possibly the editor of this esteemed newspaper is unaware that Dr Ambedkar took much from the British Constitution and what, one of the more famous parliamentarians and prime minister, Winston Churchill of that country, had to say on this subject. He wrote, "Indian army is not so much an arm of the executive branch as it is of the Indian people. Military professionals have a duty and an obligation to ensure that the people and political leaders are counseled and alerted to the needs and necessities of military life. This cannot be done by adhering to the notion that military profession is silent order of monks, isolated from the political realm."

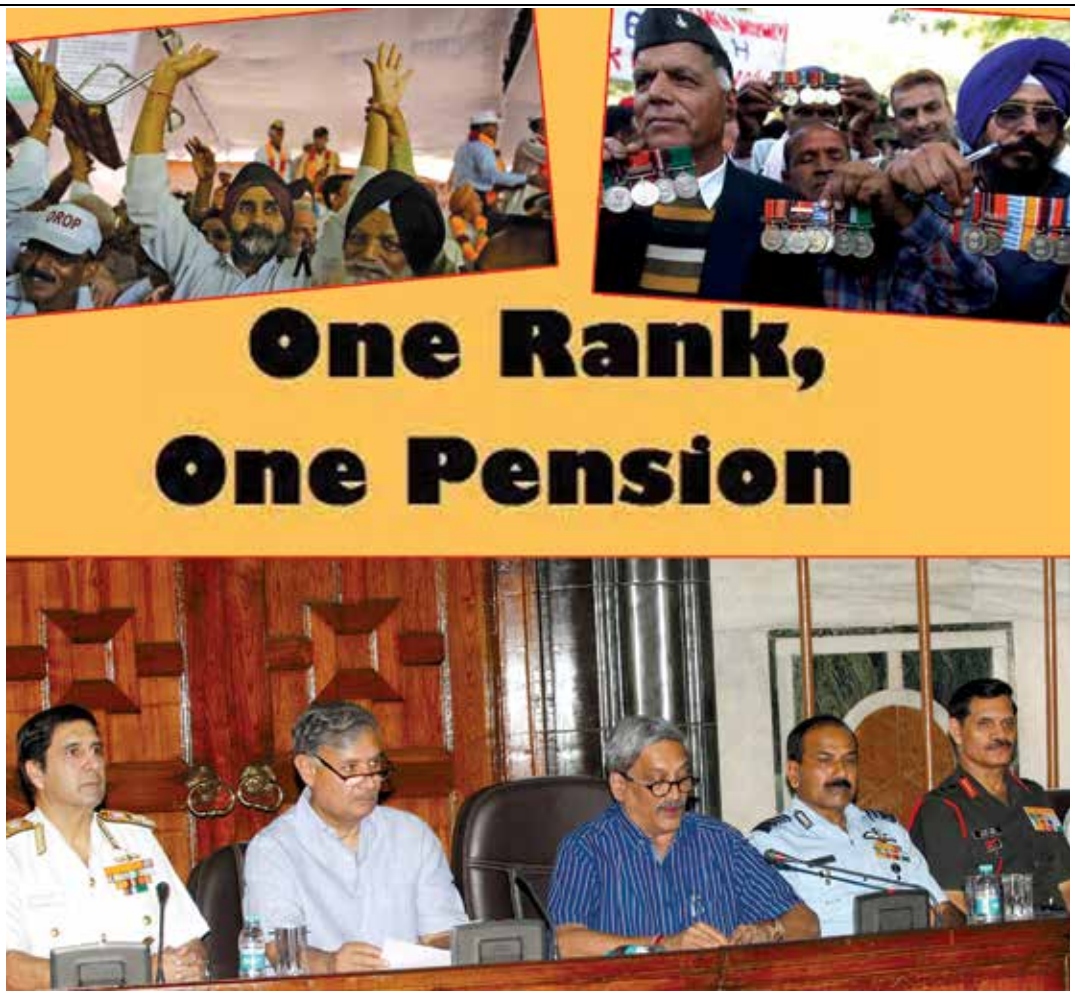
This is the same newspaper which tried to belittle the performance of Indian Army in 1965 War. Recall the caption, "What did you do in the war daddy". This is the very same editor who raised the bogey of a military coup during Gen VK Singh's age row and put it in bold letters on the front page of his newspaper.

Government's unconcern at the ongoing agitation, first prompted four former defence services chiefs to write to the President and this was followed by ten other former service chiefs writing to the Prime Minister on the subject of veteran's demand for OROP and police's highhandedness at Jantar Mantar. These ten chiefs were constrained to highlight the unfair treatment of veterans and the possible repercussions from the latest developments, as these are feared to impact those in service who are in any case future veterans.

The futility of writing to the Supreme Commander of India's armed forces on this subject has been clear for quite some time. The President had, so far, taken no note of these sad developments. It may be recalled that veterans deposited thousands of war medals at Rashtrapati Bhavan, where these were received by his staff and the President never bothered to meet the veterans, though he is designated as their Supreme Commander. When later veterans submitted papers singed in blood, these were not accepted by the President's staff, because of the fear, that, the President might pick up some infection by merely looking at veteran's signatures in blood!

For an editor of a well-known newspaper to term the ongoing peaceful and legitimate protest by the veterans for a just cause and former chiefs writing to the President and then to the Prime Minister, as some form of anarchy is completely untenable and reflects a deep seated bias against the services. In such cases, which carry the seeds of far-reaching consequences, even the serving top brass in the services must speak up and caution the government. In not doing so they would be failing in their duty.

Many areas of freedom enjoyed by a citizen of India are denied to a soldier, which is understandable, but an attempt to deny the same to even those who are retired is totally untenable. The former service chiefs, now as ordinary, but responsible citizens of



Lt Gen Harwant Singh PVSM, AVSM (Retd)

The writer was commissioned in 1955 and joined armoured corps. He has been Brigade Major of an Independent armoured brigade, General Staff Officer-1 of an armoured division and commanded School of Armoured Warfare. Has been senior instructor at the War College. Commanded a mountain brigade and an armoured brigade. Was Deputy Director Operational Logistics and Director General Weapon and Equipment at Army Headquarters. Raised first Reorganised Army Plains Infantry Division (RAPID) and fielded it in Exercise Brass Tacks as defending commander. Commanded a corps in J&K and retired as Deputy Chief of Army Staff in August 1992.

the country took the right step, in the best national interest, to caution and advise the government of dangers that lie ahead, if these policies are continued to be pursued.

Government has completely failed to note the enormous disadvantage defence service personnel are placed *vis-a-vis* their counterparts in the civil. We live in a world where you cannot disadvantage one set of employees and do the opposite in the case of others. Today a soldier is disadvantaged at many levels.

Finally, we are told that OROP involves some very complicated mathematical calculations, which for years the government has not been able to work out. Pray tell us what mathematical calculations were undertaken when Non-Functional Upgradation (NFU) was adopted for the civil services.

The RM, on 5th Sep finally announced the grant of OROP, but unfortunately added many a rider. There was duplicity and naivety on display, in equal measure. PM's speech in Haryana and then at Chandigarh, unfortunately and perhaps inadvertently spells of causing a division between officers and troops in the military. Perhaps he does not know that Indian troops will charge the very gates of Hell, only and only when their officers lead them in the assault. There are some others making attempts to bring about a split between troops and officers. For this to happen will spell disaster for the country. It would be appropriate to quote from Gen Douglas MacArthur's address to the Congress, when there was a move to reduce the strength of the officer corps, 'if you have to cut everything out of the National Defence Act, the last element should be officer corps. If you have to discharge every soldier, if you have to do away with everything else, I would still professionally advise you to keep those 12000 officers. They are the mainspring of the whole mechanism: each one of them would be worth a thousand men at the beginning of the war. They are the only ones who can take this heterogeneous mass and make it homogeneous group'.

There are some others making attempts to bring about a split between troops and officers

Finally, what the government has given is best summed up in the famous saying, *"Doodh diya magar mingne dall ke* (gave milk but added goat's droppings in it." Deploying BSF to stop entry of veterans into Delhi, to join peaceful rally on 12 Sep, was a major misstep on the part of the government. It could lead to a rift between these two elements of national security. DSA

EASE OF DOING BUSINESS IN DEFENCE

The break in the cloud is that the government is aware of the need to improve India's position in regard to ease of doing business and be counted among the first 30 or 50 countries in the global index. It is not going to be easy to do that, especially in regard to ensuring expeditious decision-making, but making promises that are not kept makes things worse. Defence production is unlike other sectors in that the defence market is monopsonic (single buyer). A very specific strategy is required to make it easy for companies to do business.

Ever since defence production was identified by the government of the day as one of the twentyfive sectors for launching the 'Make in India' campaign, there has been a renewed focus on its potential and what needs to be done to realise it.

One important step taken in the last one year since the campaign was launched has been raising of the cap on Foreign Direct Investment (FDI) in defence from 26 to 49 per cent and making a provision for permitting investment beyond this cap if it brings in state-of-the-art technology.

Though between August last year, when this step was taken, and June 2015, for which the statistics are available on the DIPP website, FDI in defence has gone up by approximately INR 48 lakh, the toal inflow continues to be so insignificant that it does not constitute even 0.01 per cent of the total FDI received by India in all sectors since April 2000. Only the coir sector figures below defence production in the list of the sectors in which FDI is tracked by DIPP.

Meagre FDI, Massive Unused Funds

For sure, the meagre inflow of foreign investment does not necessarily establish that defence production in India continues to be in a state of inertia, but sadly another statistical indicator tells the same story. In 2014-15, the amount allocated for capital expenditure, which includes expenditure on acquisition of equipment and weapon systems, was underutilised to the extent of a whopping INR 12,500 crore.

Some would argue that, considering the lead time required for manufacturing defence equipment, one year is too short a period to judge the impact of the 'Make in India' campaign on defence production. This is a very valid argument but it also indicates the challenges that lie ahead.

For one thing, this is a grim reminder of the fact that the existing product range of the Indian industry is not wide enough for MoD to resort to more and more of outright purchase from indigenous sources. Nor is the indigenous defence industry sitting on latent capabilities and capacities which could be unleashed within no time by making some minor changes in policies and procedures. Consequently, India continues to rely on import to the extent of 65 to 70 per cent of the total requirement. There are no definite signs that this trend is getting arrested, much less reversed.

Two, the underutilisation of funds also indicates the unreasonably long time it takes for a procurement proposal to move from the stage of approval-in-principle to conclusion of the contract. *Avro* replacement programme of the Indian Air Force is a case in point. This programme, which aimed at creating additional capability for aircraft building in

the private sector in India, was initiated sometime in 2012. One does not know if it is moving but, if it is, it is at the same snail's pace that has been the bane of modernisation of the armed forces in the past.

Roadblock In Ministry Of Finance

What is more worrisome is that many procurement programmes are stuck at the stage of financial approval by the competent financial authority for no apparent reason. Purchase of *Apache* and *Chinook* helicopters and torpedoes for the *Scorpene* submarine are just two examples of this. Asking the vendors repeatedly to extend the validity of their offer does not do any good to how India is seen as a buyer by the international community of original equipment manufacturers, or even the Indian companies that face similar apathy on the part of the MoD.

For the foreign companies, there are issues such as IPR and labour laws which worry them

There are several common factors that lie at the root of this malady afflicting both defence production and procurement. These factors could broadly be categorised as absence of an overarching policy framework, procedural complexities, inept decision-making and an ecosystem that is not very conducive to promotion of defence manufacturing in India.

The committee of experts set up by the MoD to review the existing procurement procedure has submitted its report recommending several measures to streamline the policy and the procedures to go with it. In an uncharacteristically bold move, MoD has hosted the report on its website. Though the committee's recommendations are apparently based on its consultation with various stakeholders and experts, it would be surprising if MoD receives no further comments from any quarter. In fact, there is a possibility of divergence of views between the Indian and the foreign companies, or even between the big Indian companies and the micro, small and medium enterprises, on some of the recommendations.

The immediate challenge that MoD faces at this juncture is to consider the recommendations, as also the comments that are bound to be made by the industry and come up with a framework of policy and procedures that promotes indigenisation of defence production without compromising on the need for expeditious modernisation of the armed forces. MoD can ill afford to delay promulgation of the new policy and procedures.

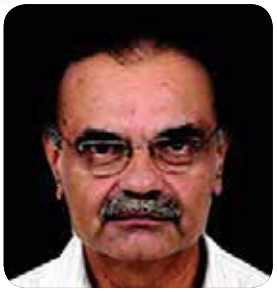
It is not going to be easy to evolve new procedures or tweak the existing ones to implement the recommendations acceptable to the government. It is always a challenge to lay down the procedures in a language that is not polysemic. Ambiguity of language used in the manuals results in two inter-related consequences. On the one hand, it raises unnecessary doubts at the stage of implementation and, on the other, it makes it difficult for the bureaucracy to resolve the issue as the text of the relevant provision in the manual lends itself to varying interpretations.

Here is an example. One of the permissible avenues for discharging the offset obligation is through 'direct purchase of, or executing export orders for, eligible products' but the offset guidelines do not explain the difference between 'direct purchase' and execution of 'export orders'. The experts' committee has commented in its report that these two functions are distinct and the role that is expected to be played by the prime contractor in executing the export order needs to be explained in greater details.

Strange Inertia

Such ambiguity should not have crept into the guidelines in the first place but what is more inexplicable is why a simple clarification could not be issued by the ministry in the last several years that this provision has been a part of the guidelines. It is difficult to imagine how this provision was being interpreted by the contractors and the ministry officials all this while. This is the kind of textual ambiguity which must be avoided at all costs while drafting the new policy and procedures.

There is another thing that the ministry would do well to keep in view while drafting the new policy and procedures. After being beseeched by the foreign companies struggling to discharge offset obligation under the ongoing contracts, MoD issued an order on 05 August 2015 delegating the authority to Secretary (Defence Production) to approve change in the offset component of the ongoing contracts but this is subject to his/her being satisfied that such change is necessary to enable the contractor to fulfil the offset obligations.



Amit Cowshish

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Subjectivity

Such controls serve little purpose. The contractors, who are solely responsible for discharging the offset obligation, are the best judge of whether it is necessary or not to change the offset content. Since the existing guidelines leave it entirely to the contractors to decide how to discharge their offset obligation, any change in the way they want to do it could also be left to them, as long as the change is within the parameters of the laid down guidelines. If required, the guidelines could be refined further to safeguard the interests which are intended to be protected by retaining the control with Secretary (Defence Production) so that the contractors would keep that in mind while changing the offset content.

It is not uncommon for MoD to seek information for reasons that are not clear to the officials who receive it. There is a need to let go of the unnecessary controls to minimise, if not eliminate, subjectivity and consequent delays in decision-making, both of which are an anathema to smooth execution of contracts. This would also be in consonance with the Prime Minister Modi's motto of 'minimum government, maximum governance'.

This is one motto which, if kept in view while formulating the new policy and procedures, would go a long way in making the ecosystem more conducive to promotion of defence production in India, though it would be a mistake to think that this is all that is required to improve the ease of doing business in the defence sector. The ecosystem comprises several factors that make it easy to do, or mar the prospects of, doing business.

Synergy between the foreign and the Indian companies is going to be the key

Unenviable Position

India presently stands at 142nd position in the global index of ease-of-doing business. The index comprises several parameters, on each of which, barring two indices, India fares quite poorly: Starting a business (158), dealing with construction permits (184), getting electricity (137), registering property (121), paying taxes (156), trading across borders (126), enforcing contracts (186) and resolving insolvency (137). Only in regard to getting credit and protecting minority rights India figures at 36th and 7th position respectively.

It does not require an expert to point out that companies would not like to enter a sector like defence production that requires heavy investment in an environment of uncertainty about such seemingly routine chores as getting electricity. The ease-of-doing business affects not just the foreign companies but the Indian industry as well, though for the foreign companies the odds are higher and concerns quite different than those for the Indian companies.

Foreign Concerns

For the foreign companies, there are additional and more specific issues such as those relating to IPR and labour laws which worry them no end. This is important because promotion of defence production in India will inevitably require a helping hand from them. India cannot afford the luxury of waiting endlessly for modernisation of its armed forces. Synergy between the foreign and the Indian companies is going to be the key to reversing the trend of large scale import of defence equipment.

While everything that needs to be done to improve the business environment is not within MoD's control, what exasperates the industry is that progress on a number of important issues which are within the ministry's remit and have a bearing on ease-of-doing business in defence has also been slow. There are unkept promises and inexplicable delay in deciding even contractual matters.

Unfilled Promises

The 'Make in India' website of the government talks about the capital outlay for defence being increased by INR 1 billion for setting up a Technology Development Fund for defence. This announcement was made by the Finance Minister while presenting last year's budget but the fund is yet to be set up. The promise to come out with revised Make procedure for design and development projects to be undertaken by the Indian companies and promulgating a pragmatic policy on blacklisting of firms/regulating the activities of authorised agents too have not fructified.

There are several instances of the Requests for Proposal (RFPs) being retracted, contract negotiations lingering on interminably, vendors being asked several times to extend the validity of their offer and delay in requests for banking of offset credits – all because of vacillation in decision-making. In fact, getting the MoD to respond to simple queries often becomes an extremely daunting task. None of this is good from the point of view of ease-of-doing business.

Silver Lining

The break in the cloud is that the government is aware of the need to improve India's position in regard to ease-of-doing business and be counted among the first 30 or 50 countries in the global index. It is not going to be easy to do that, especially in regard to ensuring expeditious decision-making, but making promises that are not kept makes things worse. Defence production is unlike other sectors in that the defence market is monopsonic (single buyer). A very specific strategy is required to make it easy for companies to do business.

This requires identification of steps that need to be taken by MoD in addition to whatever steps the government might be taking or contemplating to bring about overall improvement in the ecosystem with a view to climbing up in the global index. Providentially, the experts' committee has done the ground work for MoD.

Building a pragmatic framework of policy and procedures around the committee's recommendations would significantly improve the position as regards ease of doing business in defence. DSA

sneak peek

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HOW WILL EASE OF DOING BUSINESS IN INDIA STRENGTHEN NATIONAL SECURITY

MODERNISATION AND TECHNOLOGY FOR FUTURE WARS

India's Long Term Perspective Plan 2020 (LTPP 2020) has run its course and needs a rethink and fresh enunciation. It would be advisable to dump the current plan and redefine a new modernisation-cum-perspective plan to take us to say 2040.

Ever since prehistoric times modernisation and restructuring of armed forces to win the next war has been the *mantra* of rulers, kings and leaders of all hues. However history is mute testimony to the fact, that most often than not, the script does not go as per plan and the ground realities prove, that a perceptible gap always exists between military futurologists and the actual dynamics of the next war. Thus the famous adage of 'preparing for the last war' continues to haunt us. Meaningful modernisation of the forces is a very challenging discipline demanding not only agile and fertile minds but also intellectual honesty, audacity and rigorous research to chart out a road map for modernisation.

Wars were fought on land for thousands of years before moving to the surface of the sea. It then moved subsurface with submarines and into air and thence to space. It has now encompassed cyberspace and on the back of accelerating technology moving perhaps to embrace artificial intelligence and enhanced humans with self-generating robots. The premise being that the speed of technological change has made technology an indispensable part of military modernisation. However modernisation cannot be achieved in the true sense unless we also address doctrinal, structural, training and host of other issues. These are not mutually exclusive and are in fact a *sine qua non* of military modernisation.

Context Of Military Modernisation

Military modernisation has to be planned within a construct of tangible and visualised imperatives. It cannot be planned without a clear understanding and analysis of the current /future strategic and geopolitical landscape. Thus the modernisation plans of a maritime nation in a comparatively benign environment would be different from a fragile landlocked country in a troubled neighbourhood. As would be the plans of a nation with extra-territorial ambitions. The nature of current and future adversaries and the pace/direction of their modernisation also needs to be factored into the equation. In as far as India is concerned we live in a troubled neighbourhood with adversaries on our western and northern borders and large territorial waters and island territories to defend. Our national interests, strategic framework and geographical imperatives must be the overarching principle of our military modernisation plans.

The second factor which underpins the roll-out plan relates to crystal gazing the future battlefield and the time dimension of the current modernisation cycle. Given the accelerating speed of technological change which is underway a time horizon of more than two decades though desirable is fraught with danger of obsolescence or miscalculation. The US Army has commissioned a high powered study on 'The tactical battlefield of 2050, India's Long Term Perspective Plan 2020 (LTPP 2020) has run its course and needs a rethink and fresh enunciation. It would be advisable to dump the current plan and redefine a new modernisation-cum-perspective plan to take us to say 2040. It is interesting to note that a lot of advanced countries outsource their future force structuring and modernisation plans to their academia and civilian strategic/technical research community. India still has to rely very heavily on the serving armed forces personnel to map out future plans. This format denies us larger debate and valuable inputs besides eroding credibility of the study in the eyes of the civilian and political decision-making authority. This disconnect and gap needs to be addressed. Hopefully the National Defence University and our indigenous think tanks would in the future be given these consultancy briefs with requisite funding to flesh out a credible narrative.

Finally the economic resilience and financial commitment of a country to its modernisation plans has a major say in how the overall canvas looks. We often lose sight of R&D costs of modernisation while focusing on capital outlays for modern weapons and systems. In this context with a growing economy like ours, even a 3-4 per cent of GDP at 6 to 8 per cent growth rate would be a reasonable sum for focused well charted modernisation.

Scope Of Modernisation

The Qing dynasty of China modernised its forces non-stop for 30 years to win the next war. Yet in 1894-95 it was soundly and rapidly defeated in the Korean peninsula by the Imperial Japanese Navy and Army. Taking note of the lessons of the failure

of the modernistaion plan, Gen Fang Changlong the powerful and respected vice premier of the Central Military Commission (second only to President Xi Jinping) recently wrote a frank piece in an official Chinese publication. He among other things notes; that in the Sino-Japanese War of 1894, the Chinese lost the war because; national defence and science technology field was weak since it was dependent on other countries. He goes on to add that though indigenous technology has made great strides, key technologies and vital sectors were still in other hands and as long as that remains, meaningful modernisation would be only cosmetic.

This reads like a script from an Indian paper but must be noted as our potential adversaries are about to obviate this mistake drawing lesson from a 120 year old war. What about India which has been losing wars for more than 2000 years to foreign invaders who repeatedly came from far corners with better technology and modernised armies to loot and plunder and eventually rule us? Modernisation cannot be achieved by acquisition of modern weapons systems alone, nor can technology be the sole driver of modernisation. Military modernisation needs to be systemic and holistic incorporating a transformational change. **'Military modernisation is more about doctrinal flexibility, organisational restructuring, (and ability to change these seamlessly) operational agility, high quality quantifiable training and above all a war winning ethos with a culture of mental mobility, receptive to change'.** Thus incorporation of high-end technology, flexible organisations, robust operational doctrines and realistic training all need to be synergised and honed together for the additive benefit of modernisation. It of course goes without saying that such an army must be led by able leaders who can grasp the cataclysmic changes of the digital age, take stock periodically and adapt to change.

Lt Gen Sudhir Sharma PVSM, AVSM, YSM, VSM (Retd)

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Accelerating Pace Of Change

Everyone is aware of a technological revolution which is ongoing. However the pace of change is so rapid that even optimists and tech geeks are taken aback. Technology is not only growing at an accelerating exponential pace but outstripping manifold even the most optimistic predictions. This is so because while we are used to a linear growth historically even if the same is of a high magnitude we are not able to grasp the game changing accelerated exponential growth. Thus technological change is going to be so disruptive that many new weapons and systems will reach obsolescence barely off the drawing board. Therefore unless we are able to dramatically reduce the decision-making cycle we will be constantly chasing previous generational technology.

One of the most seminal works on the speed of technological change underway has been produced by Ray Kurzweil and I quote "An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense 'intuitive linear' view. So we won't experience 100 years of progress in the 21st century – it will be more like 20,000 years of progress (at today's rate). The 'returns', such as chip speed and cost-effectiveness, also increase exponentially. There's even exponential growth in the rate of exponential growth! Within a few decades, machine intelligence

will surpass human intelligence, leading to The Singularity – technological change so rapid and profound it represents a rupture in the fabric of human history. The implications include the merger of biological and non-biological intelligence, immortal software-based humans and ultra-high levels of intelligence that expand outward in the universe at the speed of light".

Even the iconic Moore's Law which held good for so many decades is now at the end of its life cycle. So rapid (exponential) has been the change that a new paradigm shift in computing power and technology will emerge (Perhaps the use of DNA in increasing computing speed and memory?).

Future Battlefield And New Frontiers

Visualisation of the future battlefield is an imperfect science at the best of times and given the hurtling pace of change underway it is even more so today. However a few broad pointers on the shape of things to come could give us leads to desired modernisation imperatives.

As of today there are approximately 1,265 operational satellites in space out of which approximately 160-170 are military satellites. The importance is not in numbers alone but the sheer sophistication and increased ability of each successive launch. Today's satellites are hundreds of times more powerful and adept than those ten years ago, with hundreds of satellites planned to be launched in the next decade by China alone. Furthermore China has already demonstrated kinetic anti-satellite capability of high order. With 90 per cent of communications and sensors dependent on space this is then one of the new frontiers where India must move in decisively and protect and further its national interests. The USA even feels that space is the 'new centre of gravity'. Therefore the creation and operationalisation of the Aero Space Command in India is not only mandatory but overdue.

United States has Cyber Command with a known budget upwards of four billion dollars

The second sure shot paradigm shift of the future battlefield is bound to be cyber space and the digital world. Here is where the accelerating pace of change has overtaken Moore's Law. Today there are over a billion websites and last year more than 100 trillion plus mails were sent on the Internet alone. The goings on of the dark web is even more complex and demanding. Today many nations especially China and its army of hackers has the ability to bring many global conglomerates and government organisations to their knees. Cyber security is now considered by many as the number two biggest global security threat after terrorism and ahead of inter-state wars. The heady mix of chip based technology dependant weapon advances and their command and control architecture makes cyber-attacks not only lucrative but inevitable.

The reports that Indian armed forces are considering a joint Cyber Warfare Command are a welcome step if true. Not only do we need such a command but in fact need to muster an army of cyber warriors from all disciplines including young civilian ethical hackers to come together to stich up a cogent cyber offensive and defensive shield. An impregnable national cyber shield is a myth. What is to be ensured is making intrusion very difficult and to have very dynamic foolproof detection, mitigation and remediation plans to ensure minimum down time and speedy intelligence based counter attack and recovery. Today the United States has an approximate 100,000 personnel based Cyber Command with a known budget upwards of four billion dollars. Some of the features which shall surely come into play in the next generation battlefield are:

Autonomous Decision-making: The speed and complex tempo of war will make it impossible for humans to cope with the Observe, Orient, Decide and Act (OODA) cycle. With high speed multiple sensors and supercomputing required the info overload will demand methods to handle big data. This will be done by machine.

Augmented Humans: Biologically enhanced humans are no longer part of science fiction. Night vision, hearing and improved cognitive skills and more would be possible in two to three decades from now.

Micro Targeting: This would augment precision guided munitions (PGMs). Thus surgical strikes in the true sense will be the order of the day.

Besides this the use of enhanced Artificial Intelligence (AI) based robotic system with bipedal dexterity and self-aware sensors would play a dominant role in the future full spectrum war. The world as we know is changing more rapidly than we can begin to comprehend. The changes in warfare in general and its associated technologies can now truly be called the real revolution in military affairs (RRMA). Today kinetic energy weapons, force fields, robotic swarms and micro targeting drones are a part of the emerging battlefield. Stealth, speed and beyond visual range attacks in the air are advancing so rapidly that only augmented humans or machine intelligence will be able to cope if at all.

Conclusion

There is thus a need to grasp the tectonic shift taking place in the art of warfare in our lifetime. To be able to win the next war we will need an entire fresh algorithm than heretofore. Full spectrum warfare will be fought from asymmetry to outer space, cyber space, underwater and nuclear war. Warfare is truly becoming hybrid. We have to adapt and prepare our future warriors from being scholar soldiers to techno proficient fighters and rapid decision-making agile soldiers. For modernisation to be understood in its true dimension we must embrace technology, restructure and create flexible organisations with horizontal decision-making, build a vigorous and effective training regime, understand the cyber world and above all ensure we always have an evolutionary yet fresh doctrinal thought process to handle the inherent ambiguities in this complex scenario.

Luckily we as a nation have the wherewithal and human resource pool/leadership which is competent to understand the nuances of the new century. All we need is the resolve to succeed and overcome. DSA

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Celebrating 6th Anniversary

CLOAK OF DENIAL SAGA OF SUBTERFUGE

Our leadership must studiously desist from making belligerent remarks as they serve no practical purpose. Indeed the recent remark by the Indian Home Minister that India will not fire the first bullet at Pakistan was very appropriate and becoming of India's stature. If Pakistan fails to 'turn off the terrorist tap', to use Musharraf's expression, India should not hesitate to resort to the Baluchistan option. Make this known to Pakistan's military leadership and act on it if required.

In its brief history Pakistan has not covered itself with glory, more so in matters of inter-State relations and by using terrorists for implementing State policy. The path it has chosen to tread has led to destabilisation of South Asia. Today the world view is that Pakistan is the source of the problem rather than a solution for the region's tragic afflictions.

In an article titled 'An Unworthy Ally', Christine Fair and Sumit Ganguli have written "above all, US relations with Pakistan should be premised on the understanding that Pakistan is a hostile State, rather than an ally or a partner."

Absence Of Trust And Confidence

PM Nawaz Sharif is scheduled to visit the US in October this year, this will be his second visit to that country. The impending visit is being described as a 'working visit' while Pakistan would like it to be termed as an 'official visit'. A working visit is lowest in the pecking order of visits and is treated purely as an opportunity to discuss issues concerning both countries. While working visits are not uncommon for Heads of Government, if the US insists on calling it as such, it is a subtle hint to Pakistan regarding the likely mood in Washington.

Mutual trust and confidence between the US and Pakistan are lacking

As a prelude to his visit, Nawaz Sharif had sent his special assistant Tariq Fatemi to the US in July. The statement issued after the visit read, "while recognising the significance of continued high-level engagements between the two countries, both sides agreed to work closely to sustain and further build the momentum in high-level exchanges to further solidify mutual trust and confidence".

The implication of the statement is abundantly clear: Mutual trust and confidence between the US and Pakistan are lacking. It is the same with Pakistan's neighbouring countries. And why? One does not have to look far.

Pak Perfidy

There are numerous examples of Pakistan's propensity for mendacity in international relations. Take a few recent examples.

Pakistan deliberately concealed the death of Mullah Omar for two years, even though it is believed that he died in a Karachi hospital in April of 2013. With direct links between the ISI and Afghan Taliban and having given assurances to bring the Taliban to the negotiating table, concealment of Mullah Omar's death by Pakistan was ill conceived.

But then Pakistan has always relied on subterfuge and bluster in international relations.

Take the case of Osama. It is said that the global terrorist was held in ISI 'custody' in Pakistan for more than six years. Laden's wife gave birth to a number of children in hospitals of that country. Osama acquired property in Abbottabad and set up a secure base hardly a mile from Pakistan's Military Academy. Yet, all these years Musharraf and Kayani blatantly denied that Laden was on Pakistani soil.

American Gullibility

Since 9/11 Pakistan has received around US$ 30 billion as US economic and military aid in its capacity as a 'US ally' in the war on terror. However, most of the US military aid has been used by Pakistan Army to procure weapons for a future war with India. The US discovered this many years ago. Yet financial and military aid flowed into the coffers of Pakistan, even as mutual trust

got increasingly eroded. The US continued to believe that its largess may help achieve a turnaround in Pakistan's attitude. It did not and probably never will.

The actual role played in Afghanistan by the 'ally' is well known. There is no need to define the finer points of Pakistan's perfidy as it ran with the hare and hunted with the hounds; and claimed with temerity billions of Dollars from the US Coalition Support Fund for waging war on terror.

Many of the attacks on ISAF and other targets in Afghanistan were launched by the Haqqani network, the most dangerous terrorist organisation in that country. For years the network has enjoyed close links with the ISI. It is not surprising that the former Chairman Joint Chiefs of Staff, Admiral Mike Mullen told the Senate Armed Services Committee that "Haqqani Network, for one, acts as a veritable arm of Pakistan's Inter-Services Intelligence Agency". As usual Pakistan denied the accusation and continues to keep the network as an ace up its sleeve.

Maj Gen AK Hukku YSM (Retd)

The writer is a former infantry officer of the Indian Army. He served as the Indian Military Attache in France with concurrent accreditation to Benelux countries. Later he was the Chief Military Intelligence Adviser in the Cabinet Secretariat, following that a Centre Director in NTRO. After retirement he has been speaking on South Asia in the US, across Europe and in Malaysia.

New Script Of ISI

After Mullah Omar's death was declared by Afghan government in July 2015, Sirajuddin Haqqani the head of the Haqqani network was appointed the deputy leader of Taliban. Pakistan's backing for Sirajuddin's appointment was implicit; therefore its intentions in Afghanistan remain eminently unambiguous even as it proclaims non-interference in Afghanistan's internal affairs.

President Ashraf Ghani leaned heavily on Pakistan's Army and ISI for a peaceful resolution of the conflict in his beleaguered country. Today he stands completely disillusioned and joins the ranks of most Afghans who are fed up with Pakistan's machinations. An assurance given by Pakistan's political and the military leadership for an 'Afghan led peace process' was nothing more than a feint.

For all intent and purpose the MoU signed by ISI and NDS of Afghanistan, is inoperative. Such is the loss of trust that Pakistan's embassy staff in Kabul has been withdrawn to its chancery.

The absence of its diplomats at official functions is noticeable.

The US National Security Adviser Susan Rice was in Pakistan in August in connection with the forthcoming visit of Nawaz Sharif to Washington. During her discussions she warned Pakistan to take tough action against the Haqqani network and 'stressed that these were crucial for relations with both Kabul and Washington'. Rice also 'encouraged Pakistan to advance regional peace and stability', implying that Pakistan was doing exactly the opposite.

The Withheld Bounty

The US has also held back US$ 300 million of coalition support fund till it is convinced that Pakistan is taking action against the network.

During the forthcoming visit Nawaz Sharif will be under tremendous pressure from the US to get off the high horse in Afghanistan and take visible action against the Haqqani network. Pakistan will of course plead that it does not control the network but will try to do something. It will also plead for the release of US$ 300 million blocked by Washington. At the end of it all, the charade will play out as it has done all these years.

Military options must be kept open by India without verbal chest beating

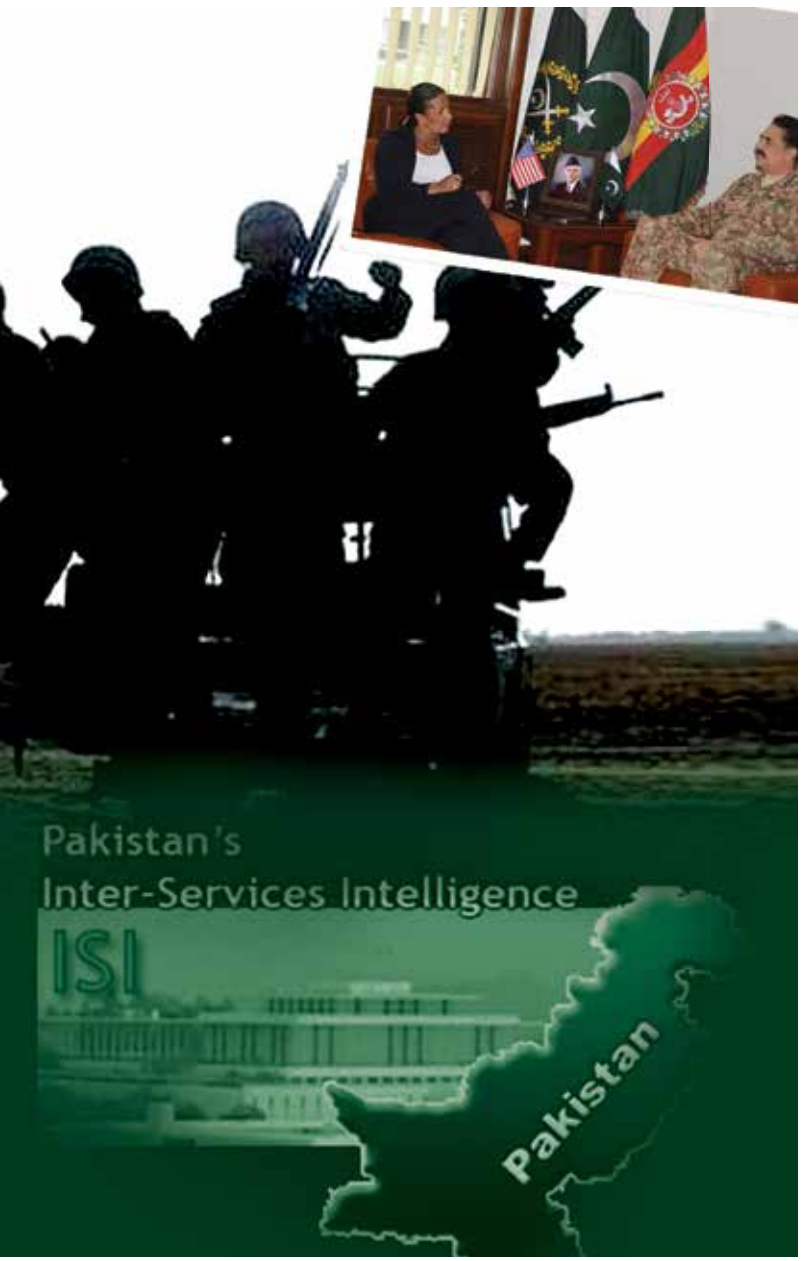
Pakistan's consistent denial that Dawood Ibrahim is on its soil is another example of its propensity for falsity. Despite the fact that Dawood is one of the world's ten most wanted fugitives on the Interpol list, ISI protects him as he plays an active role in terror activities in India. The Indian government has repeatedly presented to Pakistan irrefutable

evidence of Dawood's presence in Karachi, his dubious business interests, his Pakistani passports and other allied data. A recent telephone call by an Indian news channel to Dawood's residence incontrovertibly revealed the presence of the fugitive in Karachi. Pat came the brazen response from Pakistan denying his presence in their country.

India must call Pakistan's bluff of a nuclear strike with maturity and determination

Post-Ufa Developments

Events that followed the joint statement issued in Ufa by the Prime Ministers Modi and Nawaz Sharif are well known. Absence of the 'K' word from the text incensed Pakistan's Army. Immediately the Line of Control and the 'Working Boundary' were activated. It was ensured that the proposed meeting of the National Security Advisers was deviously aborted. And a high decibel campaign was started about Indian interference in Baluchistan. Defence Minister Khawaja Asif declared that "our arms are not meant for decoration" referring to its growing nuclear arsenal.



Under the circumstances the moot question is what should be India's approach towards Pakistan's belligerence and Janus-faced policies. In 68 years since independence India's policy for dealing with Pakistan has failed to bring peace to the subcontinent, it needs to be revised for the following reasons:

It is eminently clear that Pakistan's Army will not allow the political leadership of the day to move towards a peaceful resolution of the problems with India.

It will continue to use extremists in Afghanistan and India to further its strategic aims.

Pakistan will continue to use its nuclear capability as an umbrella for audacious adventurism in India by waging proxy war.

India's Options

So where do we go from here.

It is time India adopted a more pragmatic policy in its dealing with Pakistan's delinquency. In the event of a provocation India must bring to bear its diplomatic, political and economic clout to neutralise the threat.

Our leadership must studiously desist from making belligerent remarks as they serve no practical purpose. Indeed the recent remark by the Indian Home Minister that India will not fire the first bullet at Pakistan was very appropriate and becoming of India's stature.

If Pakistan fails to 'turn off the terrorist tap', to use Musharraf's expression, India should not hesitate to resort to the Baluchistan option. Make this known to Pakistan's military leadership and act on it if required.

Military options must be kept open by India without verbal chest beating. Two steps forward and three backward serve no purpose as was amply demonstrated during Operation *Parakram*, a meaningless standoff that started in December 2001 and continued for 11 months.

India must call Pakistan's bluff of a nuclear strike with maturity and determination. Retribution for tactical misadventures by Pakistan must come fast and strong, without losing sight of the recent statement by the Home Minister.

Lastly, in Pakistan the delusionary world of Generals is not shared by vast numbers in their civil society. They yearn for peace and development. Today their hand is weak, India must find ways to strengthen it. If that ever happens then may be future generations could see Schengen type of borders between all the countries of the subcontinent. DSA

Celebrating 6th Anniversary

WARSHIP PRODUCTION THE SUCCESS STORY

The Navy fostered a culture of encouraging young technocrats to take professional decisions in the interest of the Project. A complete integral decision-making process was built-up within the Directorates involved in shipbuilding. The Navy did what ISRO and the Atomic Energy Commission later leveraged to their advantage. ISRO/AEC also formulated their own concept design, did own detailed design, developed systems in-house, constructed the rockets and fired them. In other words, in a larger context, they were both customers and their own vendors!

Presently there are 46 warships and submarines in order at various Public and Private sector shipyards. On an average the Indian Navy has commissioned at least one to two major surface Combatants built in Indian shipyards every year for the past five years. The list of warships under construction in our shipyards includes every type ranging from aircraft carrier (Cochin Shipyard), destroyers and frigates (at MDL and GRSE), submarines (at MDL) Corvettes (at GRSE), NOPVs (at Pipavav shipyard and GSL) and numerous others including Landing Craft Utility (LCUs), Fast Petrol vessels, immediate support vessels, training ships and so on.

Apparently the pace of induction of ships into the Fleet is such that the Personnel Branch at Naval Headquarters is at their wits' end to provide commissioning crews.

Stark Contrast

In contrast, one does not hear of many indigenous armament and weapons for the Indian Army and combat aircraft for Indian Air Force. The MBT, *Arjun* entered service with the Indian Army in 2004, while the latest induction was in 2011. However, beyond the *Arjun*, there is little else. Less said the better of 155 mm Howitzers, for which the Army looked all over the world for replacement of *Bofors*, till Ordnance Factory Board realised in 2010 that they had been given all the drawings/documentation by Bofors, Sweden in 1988 to manufacture an indigenous version of *Bofors!* Named *Dhanush* the desi version has been field tested successfully. The Indian Air Force has been 'Waiting for Godot' in the form of LCA for years now. The Project that was commenced in 1983, culminated in handing over the aircraft to IAF in January 2015. The Final Operational Clearance is expected by the year end.

The success story of indigenous warship building can be traced to the Indian Navy's determination in the early 60s, to be self-sufficient and self-reliant. Leander frigate of the Royal Navy was chosen to kick-start indigenous warship building, when in November 1960, the GOI approved in principle, the construction of three Leander class frigates in India. Mazagon Dock Limited, which was taken over by the Government of India in May 1960 and was chosen to build these frigates.

Though it will be unfair to single out many visionaries of the time, who contributed to the indigenous warship building story, one must still laud the contribution of HC Sarin, then Secretary, Deptt of Defence Production and later Chairman of MDL, Mumbai and Rear Admiral SM Nanda, then DCNS and later Managing Director of MDL.

Mazagon Dock The Nucleus

The contract for building Leander Frigates at MDL was finalized and signed in 1964. The idea was to select a proven design and collaborate with the designer, in this case, the Admiralty (Royal Navy's Directorate of Ship Design) and with the two shipbuilders, Yarrow and Vickers Armstrongs. The idea was to learn the rudiments of ship design and ship construction.

The modernisation of Mazagon Dock Limited, was also commenced at the same time. Over 300 skilled workers were dispatched to Yarrow and Vickers for training. Perhaps more than anything else, the Leander Frigate Project laid the foundation for building blocks of the indigenous warship building edifice. The most significant of these was the creation of Central Design Organisation at the Naval Headquarters in 1964, which was the forerunner of Directorate of Naval Design. This was the bedrock of self-reliance in warship design. Other organisations were also created within the ambit of Leander Project to cater for various aspects of warship construction, such as WOT (Warship Overseeing Team), which was a cell of Naval Officers embedded within the shipyard to oversee construction and provide first-level interface between the shipyard and the Navy. DWP (Directorate of Warship Production) and DPI (N) (Directorate of

Product Inspection (Navy) were also set up, which were the forerunners of various Directorates of Quality Assurance in the Ministry of Defence.

This total and intimate involvement of the Navy in the early stages of the Leander frigate construction laid the framework for later successes achieved in indigenous construction of warships in the country. It was that rare combination of political will, long-term vision of Naval Staff and MoD, professionalism of Navy's technical cadre and, zest and initiative of MDL to quickly adapt to modern practices in shipbuilding.

The Navy also ensured that her officers were fully integrated in all aspects of shipbuilding including ship design, ship construction, inspection and testing, thus Naval Headquarters was not only the customer but also the vendor! This in the early stages, led to a pragmatic approach, whenever, confronted with compromises in design process. This was, infact, an important factor in success of warship building, which allowed the Navy to become a Builder's Navy from being a Buyer's Navy.

Different Culture

In Army and Air Force, exactly the reverse happened. Because there was DRDO and DGI, they treated these two organisations as if they were vendors and Army/Air Force were customers. Since the Army and Air Force did not have any design/construction responsibility, they tended to treat the Indian Designer on par with the world-standard designer, which was, infact, not a fair comparison in those days, considering the baby steps we were still taking in the field of aeronautical design, especially in the early 60s, Army/Air Force's mindset was that if they were able to get a *MiG-21* from the world market, they should be able to get a *MiG-21* from HAL. This was clearly not feasible at that time and considering that there was no attempt by Army /Indian Air Force to nurture indigenous production of weapon systems /aircraft and no serious involvement in Defence Production per se, they were not able to succeed.

Navy has managed to have Naval Officers appointed as CMDs in Defence shipyards

The Navy on the other hand, did not hesitate to send their best officers and talent to the shipyards on deputation and to allied organisations. It will be interesting to know that two officers, namely Adm SM Nanda and Adm Sushil Kumar, who later rose to become CNSs, were on deputation to Mazagon Dock Limited at some point in their careers.

Naval Hybridisation

The other important factor which contributed a great deal to later successes in indigenous warship building was the conscious decision to undertake progressive indigenisation and avoid overreaching, thus avoiding failures which could give a handle to the sceptics to put a brake on indigenous ship construction. In a sense, the goals and ambitions were limited. The first indigenous frigate, the *Nilgiri* ship was made totally from sub-systems from UK. The second had partial indigenisation, wherever possible. Similarly, incremental steps were taken in modifying the basic Leander frigate design. For instance, the first four Indian Leanders had *Alouette* helicopters and the last two had *Sea Kings*, entailing redesign of helo deck and hangar. A major leap forward in ship design was taken by DGND in Godavari class frigates which were follow-ons on the Leander class. This design was a bold innovation and extrapolation of available knowledge. Major change was the decision to use Soviet weapons and fire control systems with Western systems and Indian propulsion plant. For the first time, a hybrid vessel was developed, combining Western and Soviet systems in one hull. It was a leap of faith and reflected the confidence which the top echelons in the Navy had for young designers and also for capability of Mazagon Dock Limited. Infact, our designers were able to optimise the Leander frigate design in such a manner, that Godavari, had just the right hull form that resulted in ship going faster than Leanders despite being 12 to 13 meters longer!

Vice Admiral HS Malhi AVSM, VSM (Retd)

The writer is former Chairman and Managing Director of Mazagon Dock Ltd And presently serving as Group President and CEO of Reliance Defence Systems Pvt Ltd.

Encouraged 'Do It Yourself'

The Navy fostered a culture of encouraging young technocrats to take professional decisions in the interest of the Project. A complete integral decision-making process was built-up within the Directorates involved in Shipbuilding. The Navy did what ISRO & AEC later leveraged to their advantage. ISRO/AEC also formulated their own concept design, did own detailed design, developed systems in-house, constructed the rockets and fired them. In other words, in a larger context, they were both customers and their own vendors!

Amongst the armed forces, the Navy is the only service which has a sanction for the post of Controller Warship Production and Acquisition. Set-up in the mid-80s, the CWP&A is a quasi-PSO, which oversees warship building (including submarines) across the country and signifies the importance, which the Navy attaches to indigenous warship building.

As an aside another pointer to Navy's continued interest in warship building within the country is the fact that, it has managed to have Naval Officers appointed as CMDs of all three (and now four) Defence Shipyards almost without a break since the mid-60s.

The Indian Air Force had shown similar interest in HAL in the 60s and early 80s when a few stalwarts from the Air Force were appointed as CMDs, such as ACM PC Lal, ACM Laxman Katre and ACM Krishnaswamy, all of whom later become Air Force Chiefs. There is no doubt that synergetic Customer-Vendor /service provider relationship is engendered in a Defence PSU, with the man in uniform at the helm (only retired) since deputations to PSUs whilst serving are no longer permitted.

There are a large number of shipbuilding /submarine construction projects on the anvil. With entry of Private Sector giants in Defence Production and increase in FDI limit to 49% in Defence Projects, the future of warship building in the country has never been so bright.

The visionaries, who laid the foundation for success of indigenous warship building deserve to take a bow.

Celebrating 6th Anniversary

GOVERNMENT TO GOVERNMENT PROCUREMENTS

A PRUDENT OPTION FOR MAJOR DEFENCE SYSTEMS

Interestingly, even DPP recognises the fact that the standard procurement procedure cannot be followed in cases where procurements are required to be done from friendly foreign countries on a single vendor basis. DPP concedes that such procurements would be based on mutually agreed provisions by the governments of both the countries.

Purchase of 36 *Rafale* fighter aircraft from France through a government-to-government (G-to-G) deal has rekindled the debate about the desirability of adopting the said route for major procurements.

Prior to 1990, most of the imports were from the erstwhile Soviet bloc and were always on G-to-G basis. India had no alternative source for procuring weaponry. Whereas the West declined to sell critical weapon systems to India, the Soviet Union made them available at 'friendship prices' at low interest and deferred payment basis. By the time the Soviet bloc disintegrated, close to 90 per cent of the Indian inventory of major weapon systems was of the Eastern European countries. It was an uncomplicated and secure arrangement. In case India showed interest in the equipment offered by the Soviet Union, further negotiations were carried out between the two governments.

Effect Of Soviet Collapse

However, the break-up of the Soviet Union caught India unprepared. It had to seek alternate sources and soon realised that procurement of new weaponry in an environment of open multi-vendor competition is a long, convoluted and arduous process. A large number of inter-dependent variables have to be factored in before a deal can be finalised. The problem gets compounded for India where field trials have to be carried out in varying terrain and during different climatic conditions.

As the complete acquisition process involves a series of major functions by different organs of the government, a need was felt to evolve a detailed and well-structured procedure to facilitate decision-making and ensure expeditious procurement while demonstrating the highest degree of probity, transparency and impartiality.

Consequently, Defence Procurement Procedure 1992 (DPP-1992) came into being in February 1992 when the Ministry of Defence (MoD) issued detailed guidelines to that effect. However, as it always happens with first attempts, it suffered from some major deficiencies, which affected its implementation. After the Kargil War, a new set-up was established in MoD in October 2001.

Soon thereafter, a comprehensive procurement procedure DPP-2002, covering all aspects of 'Buy' decisions was put into effect on 30 December 2002. Subsequently, its scope was enlarged to include 'Buy and Make through Imported Technology' cases as well. DPP-2002 aims at demonstrating 'the highest degree of probity and public accountability, transparency in operations, free competition and impartiality'. DPP-2002 has since been revised seven times and the current version is DPP-2013. It mandates that maximum number of vendors should be invited to participate in the bidding process.

Thirteen Years With Little To Show

As stated earlier, DPP is the holy book for defence procurements in India. Despite the fact that DPP has been in operation since 2002, India has not been able to carry out any major defence procurement without ensuing controversies. DPP has singularly failed to deliver, notwithstanding the claims to the contrary. It is proved by the fact that every successful acquisition contract has been concluded outside the purview of DPP and on G-to-G basis.

For India, every major deal has been embroiled in allegations of corruption and slush money

According to the Stockholm International Peace Research Institute (SIPRI), India imported military hardware worth US$ 34,885 million during the period 2003-14. The period roughly corresponds to the duration of the current genre of DPP. Russia, the US and Israel were the three top sellers of weaponry to India. Their exports were US$ 24,782 million, US$ 2,683 million and US$ 2,546 million respectively. Some of the major buys were as follows:

- **Russia:** Aircraft Carrier *Admiral Gorshkov* (now *INS Vikramaditya*), *BMP-2* IFV, *Su-30* fighter aircraft, *T-90* MBT, *RBU-6000 ASW MRL*, *Smerch* Self-propelled MRL, *MiG-29* SMT, 9M119 Avir/AT-11 ATGM, Tanguska *SA-19* Mob AD System, *Mi-8* Helicopter and *Mi-17* Helicopter. *T-50 PAK FA* Fifth Generation Stealth Fighter is being jointly developed by the two governments.
- **The US:** *AN/TPQ-37* Fire Finder Counter-battery Artillery Radar Sets, Amphibious Troop Carrier Ship *USS Trenton* (now *INS Jalashwa*), Maritime Patrol Aircraft *P-8I Poseidon*, *C-130J Hercules* Transport Aircraft, *C-17 Globemaster* Heavy Transport Aircraft and *Paveway* Guided Bombs. In addition, negotiations are underway for the purchase of 155MM Ultra-Light Howitzers, *Apache* Combat Helicopter and *Chinook* Transport Helicopter.
- **Israel:** *Phalcon* Airborne Early Warning System, *Super Dvora* Patrol Craft, *Barak-8* SAM, *EL/M-2084* Air Search Radar, *Searcher* UAV, *Heron* UAV, *Griffin* Guided Bomb and *EL/M-2221* STGR Fire Control Radar. A number of joint development projects are also under implementation with government owned companies.

As is apparent from the above, almost every major weapon system was procured on single-vendor government-to-government basis, without resorting to multi-vendor open competition as envisaged in DPP. In addition, India signed a ₹ 23,562 crore contract with DCNS of France for the construction of six *Scorpene* submarines at the Mazagon Dock Ltd with imported technology. DCNS is a government-owned company and the deal was vigorously promoted by the French leadership, akin to G-to-G trade.

Bad Example

Interestingly, during the period 2003-14, only one major deal was concluded in open tendering – helicopters for VVIPs and it had to be terminated prematurely in ignominy due to allegation of corruption and procedural irregularities.

It will not be incorrect to deduce that DDP does not lend itself to the procurement of major defence systems. It is good only for low-tech and commonplace items like bulletproof jackets.

More importantly, the Indian government has realised that G-to-G is the only viable route for the purchase of major platforms. Hence, having understood the futility of buying fighter aircraft though multi-vendor bidding, the government opted to buy *Rafale* directly from the French government.

Maj Gen Dr Mrinal Suman AVSM, VSM (Retd)

The writer is India's foremost expert in myriad aspects of defence procurement procedures and offsets. He heads Defence Technical Assessment and Advisory Services Group of the Confederation of Indian Industry. A prolific writer, his articles are regularly translated in many languages and his views command immense respect in India and abroad.

Inter-se Comparison

India's defence procurement procedure mandates that on receipt of approval of a procurement proposal by MoD, the Services should evolve minimum performance attributes of the equipment sought. These are users' requirements, spelt out in terms of functional characteristics and translated into essential parameters. These parameters are collectively referred to as Services Qualitative Requirements (SQRs). The SQRs should be broad-based, verifiable, realistic and of a contemporary technology widely available in the world/indigenous market. In other words, formulation of SQRs must not prejudice technical choices by being narrow and tailor-made.

As SQRs are essential pre-requisites, no deviation or dilution is permitted after the issuance of Request for Proposals (RFPs). There are three major SQR-related issues that need highlighting. One, the government is wary of single-vendor situations and wants SQRs to be so evolved that multiple vendors are able to participate. It implies that the latest technology cannot be demanded and SQRs must be pitched at base levels to ensure that multiple vendors meet them.

Two, if a particular system performs in excess of the laid down SQRs, it gets no additional credit. All technically successful vendors are considered at par and the cheapest system is selected. As a high-tech, high-performance system can never be cheaper than a commonplace system, the Services get saddled with mediocre equipment which may be approaching obsolescence.

No One For All Jobs

Finally and most importantly, SQRs are framed keeping essential user requirements in mind. In the case of complex systems, it is well-nigh impossible for any existing system to satisfy all SQRs. It is only to be expected. All countries develop defence equipment as per their own operational requirements. Hence, no two weapon systems can ever be similar. All excel in certain parameters while underperforming in others. For example, prowess of fighter aircraft depends on a plethora of factors related to engine power, avionics, armament, radars and so on. Therefore, it is illogical to try to compare them. Besides, only a dream machine can meet the utopian user requirements.

Additionally, it is not feasible for any seller to modify an existing weapon system to suit Indian SQRs – both on account of expediency and economic considerations. Take the case of helicopters. No manufacturer can modify a flying machine and submit his quote within three months of the issuance of tender documents; and thereafter provide a helicopter for user trials in three months' time. Moreover, the limited quantity sought by India does not convince the vendor to incur additional expenditure on altering the established production line.

A study of the failed procurement bids will reveal that the above factors are the primary reason for India's inability to conclude almost all major procurement deals. India has not been able to finalise deals for the artillery guns and helicopters for the army despite repeated attempts, solely because no existing system satisfies all SQRs.

The Way Out

DPP should be followed only for simpler items. For complex defence systems, it will be prudent to follow G-to-G route, through the following steps:

- Once an acquisition proposal is approved by the Defence Acquisition Council (DAC) and Acceptance of Necessity accorded, the user Service should be asked to evolve broad cardinal benchmarks that are considered absolutely inescapable for the equipment to perform its designated purpose.
- Keeping the evolved performance characteristics in mind, request for information and willingness to sell should be solicited from all major equipment manufacturers. Thereafter, a detailed technical evaluation should be carried out by a specialist technical committee to identify the systems that fulfil the envisaged operational requirements. Additional inputs and presentations should be sought from the sellers to fill information gaps, if any. The aim should be to gather maximum technical details for conscientious and purposeful selection.
- The technical committee should forward its recommendations to DAC in a detailed format, spelling out advantages and disadvantages of each system that is considered technically acceptable for induction into Service. In addition, the selection should be prioritised. DAC must know as to which equipment is considered most suited.
- After debating the proposal at length, DAC should determine the preferred route for acquisition. It could either be outright purchase of the complete quantity from the manufacturer or purchase of limited quantity in fully built-up condition followed by manufacture of bulk quantity under license in India.
- Recommendations of DAC, with all options duly prioritised, should be circulated to other ministries (Finance, Foreign and Commerce) for their views. Thereafter, the complete proposal should be placed before the Cabinet Committee for Security (CCS) for consideration. Being the overarching government authority on security matters, it is for CCS to determine the country that should be approached for the said equipment. Procurement of major defence systems is invariably a politico-military decision – dependent on accruing geostrategic advantages; imperatives of strategic partnerships; and major diplomatic, political, economic, technological and military benefits.

Indian government has realised that G-to-G is the only viable route for the purchase of major platforms

Interestingly, even DPP recognises the fact that the standard procurement procedure cannot be followed in cases where procurements are required to be done from friendly foreign countries on a single vendor basis. DPP concedes that such procurements would be based on mutually agreed provisions by the governments of both the countries.

Finally

Whereas the desirability of procuring equipment in an open and competitive environment cannot be disputed, G-to-G deals on single vendor basis have their own advantages in the cases of major defence systems. One, such high value deals promote national foreign policy objectives. Two, as they invariably form a part of a larger package, they cement ties between two countries. The package may contain components that favour the buyer country on *quid pro quo* basis to compensate it for the outflow of resources. The compensation may either satisfy an urgent economic need or fill a critical technological gap.

Three, the seller country provides sovereign guarantee as regards delivery schedules, quality control and performance parameters. In addition, the buyer country gets the benefit of the seller country's experience as regards logistic support, training and operational exploitation. Finally and most importantly, such deals do not involve middlemen. For India, it is a factor of overriding consideration as every major deal has been getting embroiled in the allegations of corruption and slush money. DSA

Celebrating 6th Anniversary

DEFENCE AND SECURITY INDUSTRY GAINING MOMENTUM

India has some of the basic ingredients (large and relatively low cost engineering talent pool, comfort of Western nations with India from a geopolitical sense) to deliver on this opportunity but will have to significantly improve on some others like capacity building (technology, lack of a defence manufacturing ecosystem etc). Besides, the nature of warfare is becoming more software intensive, which plays into the strength of India observing IT sector growth and its diversified presence.

Ever since the new government under PM Narendra Modi started taking decisions that were seen to have stagnated during the previous regime, the excitement in the defence and strategic security has increased. The renewed enthusiasm was marked by some policy level interventions and also specific acquisition movements and wider interactions with the private sector industry. Since the new government took over in May 2014, the DAC has cleared defence purchases worth over ₹1.5 lakh crore (US$ 24.45 billion).

Everyone's attention was on the budget presented to Parliament on February 28, 2015 which set aside INR 2,46,727 crore (US$ 40.4 billion) for defence, which amounts to a 7.7 per cent increase over the previous year's allocation. The capital budget was doubled from INR 37,461 crore (US$ 6.13 billion) in 2007-08 to INR 79,125 crore (US$ 12.95 billion) in 2013-14.

After growing in line with nominal GDP over the last decade, Indian companies in the defence sector (in aggregate) are poised for a sustained high growth trajectory over the next decade and will address an opportunity that is likely to be US$ 90 billion in size by FY22 (7xFY14). This will be driven by both higher domestic and external demand unlike in the past when it was entirely by the former. While higher indigenous content (currently at 30 per cent) in the Indian defence capital spend will be a near-term driver, it is expected that exports (hitherto negligible) will be a key long-term one (offsets to begin with but cost-effectiveness driven outsourcing later on).

India In Global Supply Chain

It is likely that fiscal constraints in developed markets over the next 5-10 years would put defence spending under pressure. With intensifying competition between US and European systems integrators, price pressures are a certainty. Over the last 4-5 years there has been an increase in partnerships (JVs and MoUs) between Indian and global players (likely due to relaxation of controls on export of defence technology by the US and other countries and also by lack of choices as China is still on the banned list). These partnerships will exploit 'offset' and 'indigenisation' related demand, near-term. These would also set the stage for India becoming a critical part of the supply chain of global players for components and sub-assemblies, driving export growth, long-term. There is evidence to show that such a move is already on.

India has some of the basic ingredients (large and relatively low cost engineering talent pool, comfort of Western nations with India from a geopolitical sense) to deliver on this opportunity but will have to significantly improve on some others like capacity building (technology, lack of a defence manufacturing ecosystem etc). Besides, the nature of warfare is becoming more software intensive, which plays into the strength of India observing IT sector growth and its diversified presence. Post a 10-15 year long learning curve it is expected that some Indian companies are likely to move up the value chain to become independent systems integrators across technology-design-system integration value chain in their own right or be part of significant consortia.

The China Factor

The opportunity has critical mass, good growth and longevity: As it repairs its finances, US is likely to play a less active military role in the Asian region in the foreseeable future. This will coincide with the economic and military ascendancy of China, likely leading to greater tensions with India. Already China has widened the lead ahead of India in a number of areas of defence (3.5x India's military spend in 2013 vs 1.5x in 2000). With troubled borders India will have to increase its defence spend/NGDP to 2-2.5 per cent (vs FY14 spend of 1.79 per cent) to close the gap. This is also required to correct underspending on capex over the last 20 years. While the revenue part (60 per cent) of the defence spend is largely internal, the capex (~40 per cent) is largely import focused (70 per cent plus), India being among world's largest arms importers in recent years) leading to a relatively small domestic defence sector with Defence PSUs (HAL, BEL, BEML, BDL, MDL, GRSE) having a significant share. Private companies, restricted from defence production until 2001, seem to have caught up lately.

New Companies In Defence Production

Since opening up of the defence industry for private sector participation, the Department of Industrial Policy and Promotion (DIPP) has so far issued 222 Letters of Intent (LoIs) and Industrial Licenses (ILs) to more than 150 companies for manufacture of a wide range of defence items. Forty-six companies have so far reported commencement of production. The licenses have been issued to the Indian private sector for manufacture of military aircraft, unmanned aerial vehicles, radars, electronic warfare systems, ship-borne platforms, armoured vehicles etc. Steps

undertaken for ease of doing business in the Indian defence sector include improving the Defence Procurement Procedure, offering tax incentives to defence companies in line with other sectors like infrastructure, telecom, fertiliser, power, shipping etc which is exempt from income tax for the first ten years etc. The DIPP has taken up a series of measures on simplification and rationalisation of the existing rules and introduction of information technology to make governance more efficient and effective.

The current low base sets the stage for strong growth ahead for the private companies. Credible defence initiatives spanning couple of decades by large industrial groups like – Tatas, Larsen & Toubro – and thrust over past decade by other companies like Mahindra, Bharat Forge, Godrej, HFCL, Pipavav, Rolta etc are likely to yield positive results soon. They have kept a sustained presence despite an uncertain road map which involves sufficient spending in anticipation and hopefully this will see results in the near future as programmes are starting to move with certainty.

Competitive moats are fairly wide: Technology is the key driver of competitiveness. For Indian companies this has to be accessed either through DRDO, a foreign JV partner or developed through internal R&D spend. This puts the larger Indian companies (both PSUs and private) in a significantly better position to be system integrators compared to smaller ones that will assume the tier based roles. The role of MSMEs will be significant as they are the houses of innovations and champions of niche technology and products. These niche technology and products along with system integrators will play a critical role in building India's defence manufacturing base.

Policy Incentives

The special focus of the PM in 'Make in India', 'Digital India' and 'Skill India' offer the right opportunity to the foreign and domestic investors in the defence and security arena. While the procurement procedures already lays stress on making indigenous technologies through special focus on the 'Make' procedure, the additional thrust in 'Make in India' is an invitation to foreign Original Equipment Manufacturers (OEMs) to bring their defence manufacturing to India for optimal benefits. With the DTTI agreement with the US in place, the hallmark of which is 'co-development and co-production', the timing is right for some real partnerships to forge so that not only the capacity-building happens here while participating in Indian acquisition programmes but also focus on exports through the OEMs' already existing endeavours. As digitised battlefield takes more shape and a host of applications already conceived for NCW, 'Digital India' can feed very well to harmonise specific skills that factors in 'Skill India' efforts.

With home-grown technology developed in few segments while relatively underdeveloped in many, the credibility and flexibility of foreign partners and their governments towards flow of technologies and embracing joint development models will be the winning factors for the Indian players. However, over the long-term, just as in the pharma, automotive and IT sectors India has the capacity to be the R&D base. Also, with global systems integrators restructuring in the 'new normal' defence spending era and looking to diversify revenue streams, opportunities to buy assets in the developed world would be numerous. Indian companies with deep pockets can potentially hasten their process of becoming systems integrators by buying some of these entities (eg Mahindras buying Gipps Aero Australia and Aerostaff Australia, Piramal buying Bluebird Aero).

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Likely Exports

At the same time exports will provide a large opportunity. As many companies have started looking at India as part of a larger strategy to cut costs and take advantage of available engineering and system integration talents, driven by significant cuts in the defence spending by many countries like US and UK, the opportunity to dress up with an export focus is available. Of the US$ 1.7 trillion defence spend (2013 SIPRI estimate), ~55 per cent comes from the developed world with 37 per cent from the US alone. With pressure to control fiscal deficits and lower Debt/GDP ratios, defence spending will be a major casualty. Despite the financial crisis in 2008, defence spending sustained because of Iraq and Afghanistan wars. Post that US indicated a cut of US$ 450 billion to US$ 1.1 trillion over 10-12 years if other deficit reduction plans do not materialise. Western nations will however not want to compromise their national security even under these circumstances. This would lead to higher level of outsourcing as defence forces worldwide would ask for a better price from vendors.

Defence Stock Potential

Many opportunities will arise and expand both in PSUs (as government divests) and the private companies (as conglomerates spin-off defence entities, new pure play defence entities execute well and become larger) for financial investors. Defence sector has size, steady growth, longevity of opportunity, returns ratios etc which will work in its favour relative to many other sectors in India. The time is right for additional government support for policy and enabling ecosystem and also conducting acquisitions in time bound manner. The long wait will then be over and investor community will look at the defence sector more favourably. Already some sparks have been lighted by the stock markets for defence stocks.

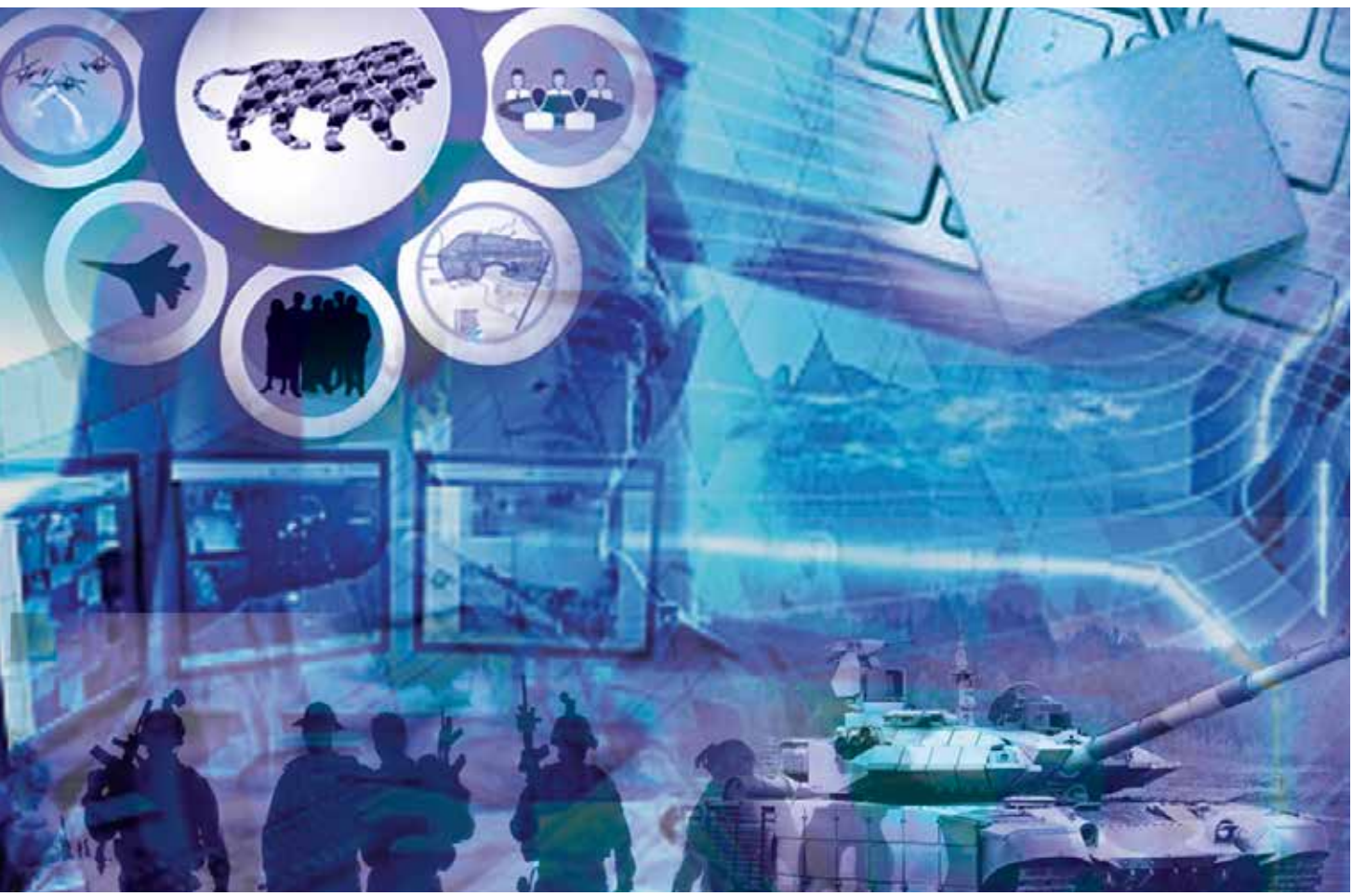
What is needed is more focused participation and investment with right policy support from government

Definitely the time is right for more thrust by the stakeholders to participate in the next two decades of growth in the defence and security sector. Since the attention is there at every level, what is needed is more focused participation and investment with right policy support from government. DSA

Celebrating 6th Anniversary

GUIDELINES FOR DEFENCE SECTOR

New security guidelines are transforming dimensions of security in Indian private industry in sensitive defence sector. This is providing security architecture to be put in place by the Indian defence companies in the private sector before undertaking manufacturing of Defence products for which they have been issued industrial license. This will not only promote private defence industry but will also help them to become world-class state-of-the-art industries with standard security measures in place.



Defence manufacturing business and security measures go hand in hand. The security measures in the country are changing due to changing dynamics of defence business and higher involvement of private industry.

The Industrial Licenses for Defence Sector have been so far issued on the basis of an affidavit from the applicants that adequate safety and security procedures will be put in place. Further the licensee would comply with the recommendations of the Ministry of Defence regarding appropriate security and auditing procedures as well as its supply chain depending upon the threat perception and sensitivity of the products to be manufactured for Defence Forces before commencing production of the licensed items.

New Guidelines

A 'Security Manual for Licensed Defence Industry' has been issued vide Press Note 6 (2014) dated 8th July 2014. With this, the requirement of affidavit

from the applicants has been done away with. Earlier, an affidavit from a Judicial Magistrate was required from the applicant to confirm that they will abide and comply with the safety and security guidelines /procedures recommended for the firm and its supply chain and as and when laid down by the Department of Defence Production, Ministry of Defence and Ministry of Home Affairs in Government of India. The applicants were facing difficulties in obtaining such affidavit and this was severely delaying the issue of license even after approval of Licensing Committee.

Further, for promoting private industry in the defence sector, the Indian government has issued this set of security guidelines as security architecture for all licensed defence companies detailing the measures to be put in place for manufacturing sensitive equipment, from an audit by the Intelligence Bureau to setting up elaborate physical defence systems and making the Official Secrets Act (OSA) applicable to employees.

The important highlights of the Security Manual are as follows:

For new applicants

- The manual prescribes minimum standards of security and other safeguards required to be put in place by the licensee in the interest of national safety and security. All units/offices/areas of licensed defence industries in the private sector dealing with any classified information /document/material will now be 'prohibited places' in terms of the provisions of the Official Secrets Act, 1923.
- Defence products will be categorised in three categories such as A, B and C. Category A involves products which require highest level of security viz propellants, warships, battle tanks and radars and weapons; category B involves a medium level of security viz wing assemblies, turret and avionics and category C requires a minimum level of security that includes sub-assembly components.

In case any company is involved in manufacturing of Defence products which lie in more than one category, then either the company should clearly segregate the areas of operation/manufacturing for different categories of products and apply the related security instructions or if the areas of operation /manufacture are not possible to be segregated, the security instructions applicable to the higher level of security will be applied.

For companies which have already been issued an industrial license

- The companies which have already been issued a license for manufacturing defence items and have already started manufacturing defence items, will have to put in place the necessary security systems as prescribed in the manual within a period of one year from the date of notification of the manual.
- Intelligence Bureau (IB)/Ministry of Home Affairs (MHA) will undertake the first security audit.

The security manual is proposed to be revised every two years

Smaller Companies At Disadvantage

It has been seen as a positive step by the industry but there are fears that some of the smaller companies may not be able to comply with all requirements, which include appointment of persons of Indian origin as a chief security officer and a chief cyber security information officer.

The IB will first carry out a security audit of all licensed manufacturers to see how they comply with the regulations. It will have the power to make recommendations to improve security. Directions have also been issued that the visits of all foreign nationals should be reported to local IB authorities. "Immediately after this security manual comes into force, IB/MHA would undertake the first security audit of all the licensed private companies in the defence sector and based on the feedback the security manual may be revised, if required".

The security manual is proposed to be revised every two years. For companies with top secret projects, the use of cellphones has been banned in areas where classified documents are being worked on and it has been made very clear in the manual that all employees would be subject to the strict provisions of the OSA for handling of sensitive material. All units and areas of licensed defence industries in the private sector dealing with any classified information, document or material are also 'prohibited places' in terms of the provisions of the Official Secrets Act, 1923. Instructions have also been issued to mark documents as 'top secret' (with a diagonal red cross), 'secret' or 'confidential', as is the norm within the defence ministry and the armed forces. Also detailed is the minimum physical security required for installations, that includes the height of the perimeter wall, anti-scaling devices, monitoring stations and communication equipment.

The Indian Licensed Defence Company (ILDC) is required to give an undertaking before commencing production of defence products that it shall comply with the provisions of the Security Manual. Simultaneously, the ILDC shall take steps to create the security mechanism and apparatus in its production /manufacturing facility/ies fully meeting the security standards prescribed in this Security Manual in order to safeguard the security of the Government classified information shared with ILDC as well as materials and end products in all phases of production activity till the end products are finally delivered/handed over to the authorised agency. In summary[1],

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1. *Source (verbatim):* Security Manual for licensed defence industries issued by Department of Defence Production, Ministry of Defence, Government of India - June 2014.

the responsibilities of the ILDC, *inter alia*, mainly entail the following.

Security organisation /personnel security

- Appointment of an Indian citizen as the Company Chief Security Officer (CCSO) who will be responsible for implementing the security architecture in the company;
- Thorough verification of character and antecedents of all persons before joining and periodic security check of various personnel employed including all levels of management;
- Briefing all employees on security do's/don'ts as part of induction programme and obtaining a written undertaking from them at the time of joining that they have read and understood the contents of this Security Manual. Their attention may also be drawn in particular to the Official Secrets Act, 1923 which extends to the whole of India and applies to servants of the Government and to citizens of India outside India;
- Reporting to the nearest Police Station and the concerned desk in the Industrial Security Branch of the Intelligence Bureau for any information with regard to actual, possible or probable espionage, sabotage, terrorism or subversion activities in its location;
- Reporting to the nearest Police Station and the concerned desk in the Industrial Security Branch of the Intelligence Bureau, for any adverse information about any employee/s that has come to notice.

Submission of the following Reports to the Industrial Security Branch of IB

- Any loss/recovery of arms, ammunition, explosives, accidents, incidents immediately on its occurrence and the same to be reflected in quarterly report;
- Foreign national visit to non-sensitive area shall be reported to MoD after the visit within fifteen days and the same to be reflected in quarterly report;
- Quarterly report on the visits of foreign business visitors, Fire, accidents, incidents, Action Taken Report on the visits of IB and other agencies nominated by MHA for external security audit and internal security audit.

Document Security

- Ensuring safe custody of classified documents and material and maintaining a security system to prevent their unauthorised removal from the facility;
- Developing procedures for safeguarding classified material in emergency situations.

Communication, Computer and Cyber Security

- Appointment/nomination of an Indian citizen as Cyber Information Security Officer (CISO) who would, *inter alia* be responsible to undertake activities like development, implementation and evaluation of the facility Information System (IS) programme, safeguard computer storage media, software, sensitive and proprietary data and prevent threats to computer and cyber security;
- The CISO function may be accomplished by one senior officer with adequate computer knowledge in addition to his/her job;
- The CISO would report directly to senior most management of the Company;
- The ILDCs in Category A and B shall get an annual Cyber Security Audit conducted. This Cyber Security Audit shall be undertaken by a Third Party, from the list of certified Cyber Security Auditors as published by Computer Emergency Response Team – India (CERT-In), on their website. In case of Cat-C ILDCs, as and when the ILDC is dealing with classified information, similar audit is to be carried out;
- Audit reports shall be submitted to NCIIP or to IB, depending on whether the ILDC is classified as being part of National Critical Information Infrastructure;
- A compliance report regarding rectification /addressal of flaws/vulnerabilities detected and reported in the Cyber Security Audit shall be rectified within the shortest possible time and a quarterly report submitted within three months as to progress on the matter, till such time as all audit findings are satisfactorily addressed.

Security of premises and physical security

- Institute physical security measures through deployment of security personnel/guards for security of premises, perimeter wall, proper access control, maintaining round the clock surveillance, monitoring through CCTVs and intruder alarm system;
- Equipping Entry and Exit gates with metal detectors and manual I-Card checking facility and deploying adequate number of security personnel for frisking and baggage screening of employees moving in and out of the plant/facility;
- Patrolling in and around the Vital Points including night patrolling by guards and dog squads, if required;
- Providing undercarriage trolley mirrors to check the vehicles;
- Setting up a Control Centre with monitoring and recording for 90 days with replaying facility for monitoring all visitors' activities within the plant /facility. The Control Room should be manned round the clock with standby arrangements in place;
- Personnel leaving employment should be relieved only after handing over passwords, email or security access pass etc;
- Ensure that the vehicles for transportation of explosive materials/finished products are escorted by the armed guards.

Visit of foreign nationals

- Reporting the details of the visit of the foreign nationals permitted with the approval of Government of India/CEOs/Head of the organisation, indicating the purpose, duration and site/place of the visit, to the nearest office of the IB within two days of the visit.

Disaster management plan

- Drawing up an elaborate disaster management plan to safeguard the plan/facility from major catastrophic incidents and carrying out frequent rehearsals to ensure effectiveness of the plan in the event of any disaster.

Security audit and compliance

- MoD will be nodal agency for implementation and review of manual. IB/MHA would be responsible for security audit and enforcement of manual;
- Initially IB would conduct audit of all the ILDCs and based on the experience and feedback MoD would review the manual, if required;
- A panel of officers would be drawn from OFB, DPSUs and Service Headquarters who can be nominated as the member of the security audit team of IB/MHA;
- Action would be taken against the companies for non-adherence to the manual or any other instructions issued by DDP/DIPP under the relevant Rules/Act;
- All ILDCs shall submit a self-certification and compliance report committing this to the internal security audit, to the DIP Division in the Department of Defence Production/MoD and IB;
- Carrying out internal security audit at least twice a year including that of Head Office in case of multi-facility organisation to ascertain the level of compliance of security instructions and procedures contained in this Security Manual;
- Providing all the requisite assistance to the IB for carrying out external security audit MHA/IB shall also be at liberty to visit any ILDC for a random security system assessment;
- Ensuring strict compliance to the security audit observations and monitor the timely implementation of corrective/preventive actions and its effectiveness.

Initially IB would conduct audit of all the ILDCs and then MoD would review the manual, if required

Waste management

- Devise comprehensive guidelines for waste management and components rejected during the Quality Assurance evaluation and periodically reviewing the guidelines depending upon the work being executed at the plant.

New security guidelines are transforming dimensions of security in Indian private industry in sensitive defence sector. This is providing a security architecture to be put in place by the Indian defence companies in the private sector before undertaking manufacturing of Defence products for which they have been issued industrial license. This will not only promote private defence industry but will also help them to become world-class state-of-the-art industries with standard security measures in place. This will also help employees to be properly and adequately trained for any security skills and measures. DSA

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DISASTER MANAGEMENT
CHALLENGES AND OPPORTUNITIES

For the first time in independent India the scales of the balance have tilted in favour of Disaster Risk Reduction and Mitigation as a designed strategy. It is the obligation of every citizen that a nationwide movement is unleashed to create Team India to avail of the historic opportunity to evolve a strategy to win India the second freedom – freedom from natural disasters.

India supports one-sixth of the world's population on barely 2 per cent of its landmass. It is located in one of the high risk zones which gets affected by all types of natural disasters. In particular, population residing in region prone to high seismic activity, flood-prone river basins and cyclone-affected coastal areas are highly vulnerable. Considering density of population and unplanned urbanisation, magnitude of calamity affects large segment of population with substantial number losing lives, besides causing huge economic loss due to destruction of infrastructure and property. It is believed that initiatives of development, degradation of ecosystem and impact of climate change are likely to increase risk of both natural and man-made disasters.

NDMA And Its Vision

In the backdrop of earthquake in Bhuj (2001) and tsunami (2004), the Government of India took a path-breaking decision by enacting the Disaster Management Act, 2005 and constituted the National Disaster Management Authority (NDMA) to fulfil the long felt need for an institutional mechanism at the national level and to bring about the paradigm shift from a response and relief centric approach to a proactive prevention, mitigation and preparedness driven approach, for preserving development gains and minimising loss of life, livelihood and property. The National Policy on Disaster Management spells out the Vision:

"To build a safer and disaster resilient India by a holistic, proactive, technology driven and sustainable development strategy that involves all stakeholders and fosters a culture of prevention, preparedness and mitigation."

At times of natural disasters, the first casualty is communication which severely impacts relief effort

Disaster Risk Reduction And Mitigation

Despite the fact that considerable effort has been made, particularly in last two decades, yet, globally no country can claim that it has become disaster resilient. In recent years, there has been a rapid increase in loss of economic assets and jobs from disasters, particularly in developing and low/middle-income countries. In this regard, two key messages of United Nations Office of Disaster Risk Reduction (UNISDR) Global Assessment Report on Risk Reduction (GAR) 2015 are:

- Sustainable Development cannot be achieved unless Disaster Risk is

reduced Globally, expected Average Annual Loss from earthquakes, tsunami, cyclones and flooding in-built environment alone is estimated to be US$ 314 billion. Figure is higher if other hazards such as drought and agriculture sector are included.

- Disaster Risk Reduction (DRR) is a good investment (Investing in DRR is a pre-condition for sustainable development) – Annual Global Investment of US$ 6 billion in Disaster Risk Management Strategies, over a sustained period, would generate benefits of US$ 360 billion – Equivalent to Reduction of Average Annual Loss by 20 per cent.

It is also estimated that economic loss from disasters is growing faster than GDP per capita implying that risk of losing wealth in disasters far exceeds the rate at which wealth is being created. Yet, it is ironical that despite the magnitude of potential costs and loss of income, reducing disaster risks is often perceived as a lesser priority than fiscal stability, tackling inflation and unemployment. For a country like India which is at a threshold of numerous initiatives for economic growth, with focus on development of infrastructure, it is imperative that new investments incorporate Disaster Risk Reduction (DRR) and mitigation measures.

As India aspires to be disaster resilient, considering our vulnerability due to recurring hydro-meteorological hazards and droughts, lot of efforts have been made to build capacity for mitigation and effective response. An example of success story is DRR and mitigation effort in field of cyclone – the State of Odisha which suffered loss of over 10,000 lives because of Super Cyclone in 1999, had very few casualties (44 and 124 respectively) when Cyclone Phailin (2013) and Hudhud (2014) struck coastal belt of Odisha and Andhra Pradesh.

In the backdrop of recent devastating earthquake in Nepal, there is a high level of awareness and desire to give greater impetus to Disaster Risk Reduction and Mitigation efforts besides being better prepared for response.

To meet future challenges of achieving sustainable development, various initiatives are underway to improve India's resilience to disasters.

Space Technology And GIS Applications

Satellites for earth observation, communication, meteorological and navigation applications provide useful inputs for hazard and risk assessments, response, relief and disaster impact assessment. Disaster Management Support (DMS) of ISRO and National Database for Emergency Management (NDEM) located at National Remote Sensing Centre (NRSC) are providing real time inputs to the States and other stakeholders.

Early Warning And Forecasting: India has come a long way in harnessing advanced technology in formulating a reliable and responsive Early Warning and Forecasting mechanism particularly in the field of meteorological forecasting of rains, floods and cyclones. We need to further enhance our effort to factor in other parameters so as to accurately predict and forecast Landslides and Droughts, besides continuing to participate in global initiatives to develop forecasting and Early Warning System for earthquake. One of the challenges in this regard is to achieve better coordination with all the Government, semi-government, private, regional and international agencies so as to synergise their efforts to be able to provide more accurate and timely early warning and forecasting.

Reliable Communication including Last Mile Connectivity: For immediate dissemination of early warning it is imperative that we achieve last mile connectivity to affected populace. At times of natural disasters, the first casualty is communication which severely impacts relief effort. Therefore, development of a dedicated

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and robust Disaster Communication Network with inbuilt redundancy is being given a high priority.

DRR Mainstreaming: Globally, need for mainstreaming DRR as an integral part of development has been accepted since it helps reduction of vulnerabilities and exposure to risks besides strengthening resilience. Harmonising and integrating climate change adaptation with sustainable development and linking with DRR effort is considered a new development paradigm. Essentially, Disaster Risk Management (DRM) approach encompasses risk identification, risk assessment, risk treatment and risk communication. An exercise to undertake natural Hazard Risk and Vulnerability Assessment (HRVA) including mapping of resources, development of Disaster Loss Data Base and Cost-benefit Analysis of Investment in Risk Reduction is likely to provide useful inputs to the Government for formulating development schemes /investment plans.

NDMA has initiated the process to have an institutionalised interaction with NGOs and Corporates

Land Use, Urban and Spatial Planning: DRM approach incorporating HRVA in land use, urban and spatial planning while conceptualising mega development projects such as Smart Cities, is need of the hour.

Legislation, Implementation and Accountability: Though a comprehensive DM Act 2005, National DM Policy 2009 and numerous guidelines specific to various types of natural and man-made disasters and important facets of DM have been issued, their implementation is not up to the mark. NDMA has embarked on an initiative to review DM Plans of States and various Government Departments, besides institutional monitoring and accountability.

Strengthening Techno-legal Regime: Refinement of existing Building Codes for region specific /various types of risk prone areas is under way. Mechanism for strengthening compliance of these Codes, particularly in priority sectors (lifeline infrastructure viz Hospitals, schools, Government buildings, heritage buildings, communication hubs, power plants) through safety audits at the local municipal-level need to be instituted.

Response Preparedness: Swift and effective response to any crisis situation does not come about through capacity development and training of Response Force alone. Effective communication, efficient management of Emergency Operations Centres (EOCs), helplines, medical facilities, relief shelters with pre-positioning of logistics go a long way in ensuring prompt and effective response.

Capacity Building: India has the largest, especially trained and equipped, dedicated National Disaster Response Force (NDRF) which has acquitted itself on numerous occasions in responding to various disasters at home and abroad (Fukushima 2011 and Nepal April 2015). Though as per the DM Act every State should also constitute State Disaster Response Force (SDRF) the same has not been done. To bring about synergy amongst various forces/agencies responsible for response, local police, fire services, SDRF, Civil Defence, Home Guards need to be suitably equipped and trained during simulated disaster mock drills. An initiative to involve NCC also in such exercises has been initiated.

Reconstruction And Recovery

For formulating a meaningful Reconstruction and Recovery Plan, we must evolve a method for professional assessment of damages in any post disaster situation ie Post Disaster Need Assessment (PDNA). We need to have experts who are trained to carry out this assessment.

It is advocated that the approach to the reconstruction process has to be comprehensive so as to convert adversity into opportunity. Incorporating disaster resilient features to 'build back better' to be the guiding principle. Efforts should be made to support and enhance the viability of livelihood systems, education, health care facilities, care of the elderly, women and children etc. Other aspects warranting priority will be provision/restoration of drinking water sources, power, sanitary facilities, housing, road connectivity, communication, provision of credit, supply of agricultural inputs, upgradation of technologies etc.

Psycho-social support in the context of disasters refers to comprehensive interventions aimed at addressing a wide range of psycho-social and mental health problems arising in the aftermath of disasters. Community, duly supported by NGOs and trained paramedics can effectively address psychological /social trauma of disaster affected community.

Role Of NGOs And Corporates

Virtually in every incident of national calamity or disaster, it has been experienced that NGOs and Corporate sector play a vital role in assisting rescue and relief effort. During the recent Nepal earthquake, it was amazing to see the spontaneity of their response with enormous offer of help in speedy mobilisation of varied type of resources. NDMA has initiated the process to have an institutionalised interaction with NGOs and Corporates. Such initiative at the State and district level would ensure that effort of all Government agencies is harmonised towards bringing succour to the affected population.

A number of Indian and international NGOs are involved in building capacity of the community to handle disasters and also undertake risk reduction and mitigation measures. Considering the potential of NGOs, they need to be encouraged and supported. As per Department of Public Enterprises guidelines (2010), Central public sector enterprises can incur expenditure under Corporate Social Responsibility (CSR) for DRR and mitigation measures besides

contributing towards rescue and relief. Similar guidelines need to be formalised for private sector under provisions of the Companies Act 2013.

Community Based Disaster Management

Globally, both as part of Hyogo Framework (2005) and Sendai Declaration (Mar 2015), it is acknowledged that in any disaster, it is the community that is the first to get affected and they are the first responder too. Therefore, it is important for local people to comprehend nuances of type of hazard, vulnerability and extent of risk that they face. Since they best understand the local socio-economic environment, they need to be involved in structuring and implementing DRM programmes. Adoption of a participatory approach with involvement of Government agencies and NGOs contributes towards enhancing resilience of the community.

Contours Of Road Ahead

Initiatives which form the Road Map of our Perspective Plan are:

- Strengthen multi-hazard warning system.
- Formulate a robust Disaster Communication Network with GIS enabled Decision Support System (DSS) connecting Emergency Operations Centres (EOCs) at the National, State and District level.
- Launch Pan-India earthquake, floods and landslide mitigation programmes.
- Establish National Disaster Mitigation Fund, Risk Financing and Risk Insurance.
- Plan Higher Education and Research in DRR.

Regional Initiatives

Since disasters do not recognise geographical boundaries, it is imperative that India assumes the regional leadership in DM. With the establishment of SAARC DM Centre (2006) at New Delhi, as part of curriculum seminars, workshops, training programmes covering various aspects of DM are being conducted. Consequent to recent calamity in Nepal, Hon'ble PM has proposed conduct of an Annual DM Exercise and Regional Workshop for all SAARC members, to share best practices, information sharing and approach for joint response from 23 to 27 Nov 2015.

Culture Of Prevention

There is no doubt that dynamic disaster prevention strategies would reduce economic losses besides saving precious lives. Funds currently spent on intervention and relief could be devoted to enhancing equitable and sustainable development. However, building a culture of prevention is not easy. While the cost of prevention has to be paid in the present, its benefits lie in distant future. Moreover, the benefits are not visible; they are the disasters that did NOT happen; that is why the sluggishness to follow them up with vigour. It is therefore important to harmonise, integrate and embed DRR within sustainable development policies and programmes thereby enhancing resilience.

Also, DRM approach would avoid duplication of effort, optimise use of available resources, promote synergy in functioning of various agencies and enable policy makers to formulate design of development programmes. It is pertinent to mention that for Risk assessments in future, there is need to factor in impact of pace of growth of population, rapid urbanisation, planned development with commensurate infrastructure, environmental degradation and climate change adaptation. Exposure to future disasters has the greatest potential to be reduced if DRM approach is incorporated in land use, urban and spatial planning and in post disaster reconstruction planning.

For the first time in independent India the scales of the balance have tilted in favour of Disaster Risk Reduction and Mitigation as a designed strategy. It is the obligation of every citizen that a nationwide movement is unleashed to create Team India to avail of the historic opportunity to evolve a strategy to win India the second freedom – freedom from natural disasters. DSA

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SIX 'MAKE IN INDIA' LESSONS FOR ARMY AND AIR FORCE

The Indian Naval Indigenisation Plan breaks down the 15-year period into 5-year blocks with forecasts of the major systems and subsystems that it will require. Providing this kind of clarity to both DPSUs and increasingly private industry partners helps the entire ecosystem support the indigenisation effort. The Army and the Air Force in contrast, have long-term perspective plans relating to their force structures and planned acquisitions but there is no accompanying document that clearly lists what they would procure domestically and how.

Long before 'Make in India' took centre stage the Indian Navy was steaming full speed ahead in its indigenisation efforts. Missile boats, frigates, destroyers and submarines, all made in India, have long been in frontline service with the Navy and indigenous n-powered ballistic missile submarines and aircraft carriers are soon poised to join the fleet

India's proud shipbuilding tradition dates back to 2500 BC when the Harappans were building ships in their docks in Lothal, in present day Gujarat. That tradition continued through the ages and laid down another proud marker in 1735, when the Wadias – Parsi shipbuilders from Surat, built the Bombay Naval Dockyard, Asia's oldest drydock. Warships such as *HMS Minden*, *HMS Cornwallis*, and *HMS Trincomalee* (UK's oldest surviving warship) were 'birthed' in Bombay, now Mumbai.

Another business family, the Walchands, founded Hindustan Shipyard in 1941, in Visakhapatnam, which the government subsequently took over in 1952. Independent India's defining shipbuilding

hour came in 1966, when the keel of *INS Nilgiri*, based on the British Leander-class frigate was laid down at Mazagon Dock, Mumbai. It was commissioned in 1972 and five more sister ships were built, laying a solid base for a truly 'Indian' Navy.

Over the years, around 119 warships large and small have set sail from domestic shipyards. Why does, in contrast, the Air Force struggle to get even a squadron of the *Tejas* inducted and the Army has only a symbolic two regiments worth of the *Arjun* Main Battle Tanks (MBTs) to show for its efforts?

Lesson 1: The Devil Is In The Design

Analyse any Army or Air Force procurement or development of a major weapon system and you will find that their involvement is confined to only two aspects – at the outset when the QRs (qualitative requirements) or specifications for a weapon system is laid out and when user trials have to be conducted to certify whether the specifications have been met by the end product. The whole phase of design and development is given a complete miss, or at best cursory input.

The Navy was smart enough way back in 1956 to figure out that this was a major lacuna and set up the Corps of Naval Constructors. It morphed into the design cell of the Directorate of Naval Construction in 1962 and expanded into the Central Design Organisation in 1965. It was only in 1976 though that the Directorate of Naval Design (DND) emerged to helm the Navy's warship building efforts to this day. Navy designers had already shown the way with the Nilgiri-class and the DND unlocked new horizons with the Godavari-class frigates, with the lead ship being commissioned in 1983.

Comprised today of over 400 multi-disciplinary specialists and experts, the DND by virtue of being at the genesis of every domestically produced warship has both *de facto* as well as *de jure* control of the entire weapon system's evolution.

This is not to say that the Navy does not struggle with the DRDO and DPSUs in realising the weapon systems on-time, on-budget and on-quality. However, the fundamental difference in approach compared to the other two Services leads to more positive outcomes and contributes further to many other success factors that we will examine subsequently.

Rajit Ojha

The writer was awarded by the DRDO while still in school for his essay 'Wars of the Future', and took a boyhood passion for matters military into a career as a Modelling and Simulation (M&S) professional. Leading consulting engagements, first with the United States Air Force and then the Indian Army, he has had frontline exposure to the range of challenges faced in modern military acquisition programmes – from concept to design and development, to finally rollout.

Lesson 2: Crawl, Walk, Run

Crawl-Walk-Run is an axiom central to military training, focusing on a gradual yet steady increase in proficiency of men under arms. The Navy has taken the very same approach to building warships, with great results.

In the 1960s, when building the *INS Niligiri*, the Navy chose a contemporary British design. However, it was only from the fifth ship onwards, *INS Taragiri*, that the Navy started to experiment on their own. The design was modified to carry the large *Sea King* helicopter that specialised in hunting submarines, the threat from which had been painfully driven home with the sinking of the *INS Khukri* by the *Hangor* in the 1971 conflict.

The war of 1971 also saw the highly successful use of anti-shipping missiles in the attack on Karachi. So when the design of a follow-on to the Nilgiri class – which lacked such missiles – came up for discussion, the DND built on past success. The new Godavari-class of frigates, would retain the *Nilgiri's* basic design but be approximately 33 per cent larger and carry 4 bow-mounted *Styx* missiles. It would also carry two *Sea King* helicopters.

Today the largest Indian warship being built is the 35,000 tonne carrier *Vikrant* which will give Indian shipbuilders the necessary skills to take the big leap on to the planned Indigenous Aircraft Carrier (IAC)-2, that will displace a massive 65,000 tonnes.

In contrast, the DRDO went about creating the *Arjun* MBT from scratch, neglecting to first

remove the deficiencies of the earlier *Vijayanta* tank, which had made the Army chronically suspicious about any home-grown effort.

Elsewhere, the LCA team went into a tailspin on the development of the ambitious *Kaveri* engine, not learning from the *Marut* experience where the lack of a suitable engine grounded a fundamentally sound fighter design.

Now talk is in the air of developing the Advanced Medium Combat Aircraft – a 5th generation stealth fighter – but this will mean completely skipping the intermediate stage of developing a fighter aircraft of the MMRCA class (*Rafale*, *Typhoon*), which should have been the logical next step.

The Navy was smart enough to set up the Corps of Naval Constructors

Lesson 3: A Few Good Men

The location: An Indian Army establishment in Delhi. The occasion: A design meeting to develop a wargame on specialised infantry operations. The people: Highly experienced officers from some of India's finest infantry regiments, as well as the writer of this article, who was consulting on the technology and product aspects of the wargame.

The officers, deputed to this establishment, knew from the start of their tenures, given the long duration of such projects, that they were going to be 'posted out' long before they got to see even the prototype of the wargame. Once they left to go back to the regular soldiering, their cumulative knowledge would be lost to the system and the wheel would be reinvented again.

Moreover, the Army offered them no clear professional progression due to the absence of a design and development cadre like the Navy's DND. It bewilders the writer to this day as to why both the Army and Air Force can't emulate their sister Service.

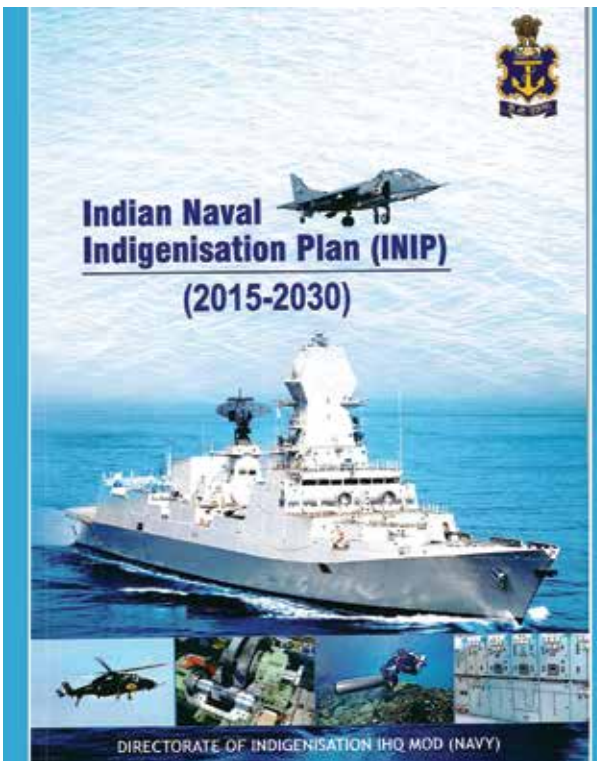
Men like Capt NS Mohan Ram, a brilliant UK-trained naval architect who was part of the *Niligiri* team and later headed the Godavari-class design, and Lt Cdr (later Rear Admiral) JJ Baxi who solved many of the electronics and weapon integration issues with these ships are legends in the community. Baxi's contemporary, Cdr Ravi Kohli would become a Vice Admiral and take up the specialised post of Director of Naval Research and Development.

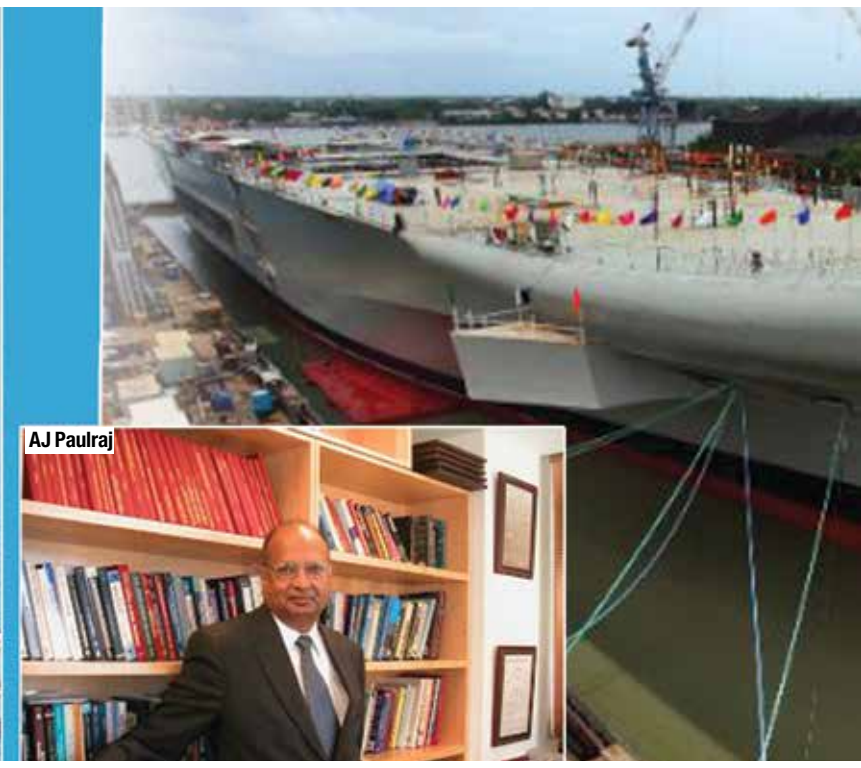
The Navy pushed talent into areas dealing with a warship's associated systems as well. Cmde AJ Paulraj developed the groundbreaking Advanced Panoramic Sonar Hull mounted (APSOH) before leaving the Navy for a glittering career at Stanford where he developed the pioneering MIMO technology that powers modern high-speed mobile data. Not many people have a VSM, AVSM, *Padma Bhushan*, as well as the Alexander Graham Bell medal on their CV.

The Army and Air Force have to invest in a few good men and women and leave it to them to do the rest.

Lesson 4: Development Follows Doctrine

India's rising stature as a global player requires the Navy today to transition from a bluewater to an expeditionary doctrine. No longer can aircraft carriers – the tools of choice for sea control – be in the light category (under 30,000 tonnes) of the now decommissioned *INS Vikrant* or the





INS Viraat. You have to carry more aircraft, which are themselves heavier and larger because of longer range and payloads.

Consequently, the Navy has embarked on an ambitious domestic programme which will first see the new *INS Vikrant* being built followed by the twice as large, catapult-equipped IAC-2. Some defence analysts may quibble about India being better off with more light carriers but the Navy, including retired chiefs such as Adm Arun Prakash – a decorated naval aviator, carrier CO and finally naval chief – are absolutely clear that given the doctrinal needs, bigger is better.

This kind of clarity could have helped the *Arjun* MBT. The Army had got used to the Soviet philosophy of large numbers of a mass-producible, inexpensive tank, weighing around 45-tonnes, like the *T-72*. Instead, DRDO designers, with little or no buy-in from armoured corps officers, designed the *Arjun* as a heavy tank in the 60-tonne class along a Western design philosophy that emphasises quality – crew protection, sensors and gun accuracy – over quantity. The Army never felt the need to revisit its doctrine and failed to upgrade its logistics infrastructure to handle a tank of the *Arjun's* weight and dimensions.

The Air Force has similarly failed to articulate a clear need for asking the ADA to develop an LCA-MkII. Of its frontline force, the *Su-30* is a heavy fighter and the planned purchase of *Rafales* is in the medium category. Where exactly does a light fighter like the LCA fit in IAF doctrine today?

Lesson 5: Sink Or Swim

When you put all your eggs in the domestic manufacture basket then you better make it work. While the Air Force and Army continue being import-centric the Navy has reached a stage where all 45 of its ships on order last year were from domestic shipyards.

The Indian Naval Indigenisation Plan (2015-30) sets out clear goals for indigenisation, which is near 100 per cent in the 'float' (ship superstructure) category and 50 per cent in the 'move' category (engines, transmission). Now, the focus is on the 'fight' category (weapons and sensors) where there is still overwhelming foreign dependence (70 per cent imports).

Going further the INIP breaks down the 15-year period into 5-year blocks with forecasts of the major systems and subsystems that it will require. Providing this kind of clarity to both DPSUs and increasingly private industry partners helps the entire ecosystem support the indigenisation effort.

The Army and the Air Force in contrast, have long-term perspective plans relating to their force structures and planned acquisitions but there is no accompanying document that clearly lists what they would procure domestically and how.

One only hopes India never faces sanctions and arms embargoes, for these Services to find out that being overly dependent on foreign suppliers has left them marooned, while the Navy keeps afloat.

The Army and the Air Force in contrast, have long-term perspective plans

Lesson 6: Private Power

If the argument against indigenisation was the DRDO and DPSUs were not pulling their weight, that excuse will also not hold for long. Private sector participation in India's defence industry is set to rise manifold with a slew of licenses and projects cleared under 'Make in India'.

Here too, the Navy has set the pace. Key aspects of the strategic Arihant-class SSBNs have been executed by L&T, Tata Power SED and Walchand Industries. Three new improved Krivak-class frigates will now be produced by newcomer Pipavav Defence domestically, than at Russian shipyards.

For the Army, the approximately ₹ 40,000 crore Battlefield Management System (BMS) contract might prove a turning point. Contracted out to two competing private sector consortia with private players like L&T, Tata Power SED and Rolta thrown into the mix, this is the largest 'Make in India' contract ever. The Air Force however has a bigger challenge, as the aviation sector has proven to be far more difficult to master.

Ironically, technical talent from all three Services has always been highly sought after by the private sector. The writer has personally witnessed the brain drain from the Services, across all levels. This process will only accelerate. Mitigating this is yet another reason on top of all the others before for the Army and Air Force to create a dedicated design, development and acquisitions cadre to harness the potential of their finest technical minds.

The Navy has already given them a chart to navigate the waters. DSA

Celebrating 6th Anniversary

REGULATORY AND PROCEDURAL REORIENTATION FOR MAKE IN INDIA

There have been some big bang announcements like the French *Rafale* deal during PM's France visit but subsequent controversy about this deal raised suspicion about sustainability of such knee-jerk actions to support 'Make in India' campaign without having a foolproof regulatory and procedural framework in place. PM Modi, the master dream weaver and Manohar Parrikar, the technocrat, were expected to give impetus to defence procurement and indigenous defence manufacturing by resolving policy and regulatory issues dodging the system but it has taken inordinately long and much awaited reforms are yet to see the light of the day.

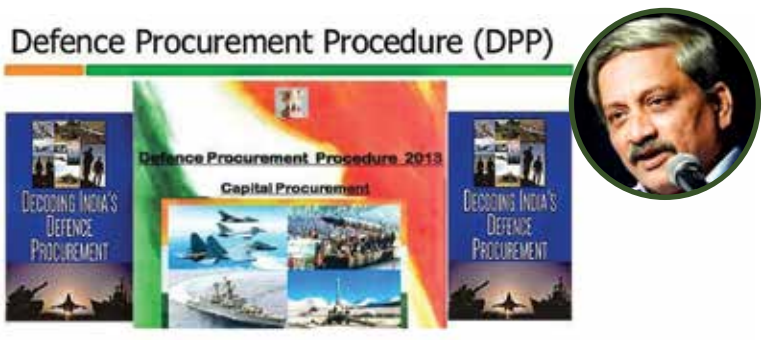
Speaking at an interactive session organised by the Confederation of Indian Industry at Bengaluru in February this year, Defence Minister Manohar Parrikar said we need 'implementation and action' and not 'little-little' changes in policy.

No doubt **'fearless implementation and result-oriented action'** by all stakeholders is the crying need of the hour for the modernisation of our defence forces, but the regulatory or policy issues hampering the process also need to be addressed urgently. In fact, the clarion call given by the PM to 'come, make in India' and the subsequent 'Make in India' push by the governmental agencies have raised new questions about defence production without addressing the old ones especially related to the make procedure. Procedural reorientation and clarity in existing or new provisions combined with focused action is required if the nation wants to lose the tag of biggest arms importer and establish a credible indigenous defence manufacturing sector.

Synergise Procedural Framework

Number of incremental steps taken in the form of introduction of Defence Production Policy in 2011, revision of offset policy, revised Defence Procurement Procedure (DPP) 2013 and increase in FDI to 49 per cent besides few other steps taken by the successive governments were expected to revolutionise the defence acquisition procedures and especially the indigenous defence manufacturing sector. Sadly this has not happened despite the change in government and policy interventions so far.

It is a well-known fact that not a single project has taken off under the make procedure introduced in the DPP in 2006. Nine years is a long time to analyse the reasons for this failure and bringing about necessary changes to make it work. The confusion has further multiplied with the current 'Make in India' initiative. The DPP 2013 pre-dates the 'Make in India' initiative and hence does not lay down a framework for adopting this initiative. Clearly, what is needed is a policy that brings clarity regarding the new initiative and the existing 'Make' procedure to synergise both and thus strengthen the defence manufacturing sector in India. It should address various questions pertaining to role of various stakeholders, transfer of technology, co-development and co-production. Such a policy will work only if it is backed by a procedural framework. The DPP 2013 needs to be urgently reconceptualised to bring it in sync with the new policy. In particular, the 'Make' procedure needs to be reoriented to accommodate the spirit of 'Make in India'.



Reforming Defence Contracting Procedures

Far from incentivising indigenous defence manufacturing, the current DPP provisions appear to discriminate against domestic bidders as can be seen from the categorisation process and the indigenous content obligations laid down in each category. The DPP also does not contain provisions to enable transparency and interaction with vendors at various stages of the acquisition process. Bringing in transparency is a key to removing corrupt practices as well as developing greater confidence in the system while ensuring timely action by various stakeholders.

Another important area which almost needs to be rewritten in the DPP is the management of transfer of technology (ToT) and intellectual property rights (IPRs). Experts on the subject have written extensively about the suggested provisions regarding ToT and IPRs that need to be incorporated in DPP so as to ensure legal consistency, contractual clarity and effectiveness in achieving intended procurement objectives. A clear and unambiguous DPP containing explicit guidelines on IPRs and ToT would help in reducing delays, contracting timelines and contractual disputes, while also ensuring that Government's 'Make in India' route for achieving self-reliance through transfer of technology is satisfactorily achieved.

Adequate international experience exists in both developed and developing countries which

have already passed through the stages in defence indigenisation through which we are passing now. Our policy makers need to draw from these experiences and international best practices to bring about policy changes in defence acquisitions to effectively support the 'Make in India' campaign. Sustained indigenisation is essential for India to retain its relevance in global standings and therefore streamlining the DPP is an important element for the overall reforms in defence procurements.

Time Delays

The DPP stipulates that processes from issue of Request for Proposal (RFP) to contract signing should be completed within 74-137 weeks. However, according to the Defence Secretary's statement before the Parliamentary Standing Committee on Defence (SCD) for its 2012 report, for Army procurements, RFP formulation takes nine months as against the stipulated four weeks; technical valuation takes six months against the stipulated 12 weeks; and General Staff evaluation 18 months against laid down 28-54 weeks taking the total time taken far beyond the laid down schedule. Such delays reflect on the complexity and ambiguity in the procedures as also the attitude of decision-makers at various stages. Delays result in cost overruns and contractual disputes. It is an indicator of the need for drastic systemic reorientation of our regulations and procedures.

Focus On Outcomes

While the effort of years has helped evolve a procurement system which lays down a framework and guidelines to reduce ambiguities to some extent and tries to bring in transparency and fair play, it also suffers from being a **compliance-oriented system rather than an outcome oriented system.** It gives no flexibility to the procurement officials to deal with varying complex situations arising during the course of a particular procurement case. A truly efficient and effective system of defence procurement, would have to focus on outcomes while providing flexibility and responsiveness to those responsible for implementation. The features of flexibility, responsiveness and being outcome focused are hallmark of defence procurement systems around the world. The stated vision of Federal Acquisition System established by the USA is 'to deliver on a timely basis the best value product or service to the customer, while maintaining the public's trust and fulfilling public policy objectives. Participants in the acquisition process should work together as a team and should be empowered to make decisions within their area of responsibility. Presently there is no stress on performance measurement and management in our system. There is need to incorporate performance management to help establish accountability of individuals and teams and thus improve outcome.

Much awaited reforms are yet to see the light of the day

Remove Mistrust Of Private Sector

Although the Indian defence industry was opened to the private sector in 2001, the latter is yet to contribute in any meaningful manner. For this to happen, indigenous defence manufacturing has to be incentivised or at least facilitated. The biggest hindrance in the private sector's participation so far has been mistrust. When it comes to big contracts, procedural hurdles come in the way, making it virtually impossible for the private sector to get into complex defence manufacturing. Moreover, single source procurement from the private sector is still considered a taboo, whereas import without competition is greatly admired. For the 'Make in India' push to succeed, there is a need to change the mind-set and treat the private sector as an equal partner or in fact a preferential treatment be given to it over global vendors. A case in point is Indonesia which has literally banned procurement from global sources without involving indigenous partners. Necessary enabling regulatory changes have to be brought in to facilitate /give preferential treatment to indigenous manufacturers.

Baffling Delays

The time taken for making necessary changes in the procedures to implement the 'Make in India' initiative since it was first announced by the PM is baffling. It indicates lack of well-thought-out strategy, aim and focused approach before adopting high sounding slogans. There are large number of important issues relating to procurement policy and procedures awaiting resolution. The recommendations given by experts' committee need to be examined and the revised policies and procedures that everyone has been waiting for, must be promulgated urgently to reinforce government's resolve to fix the problems besetting the modernisation of the armed forces. While the urgency in promulgating revised policies and procedures cannot be over stressed, it is equally important that the revised procedures are easily implementable giving no scope to concerned government personnel to have differing interpretations and finally 'sit over' cases to 'play safe'. This is possible only if there is absolute clarity in the provisions laid down. It is necessary to assess the consequential implications of any amendment that is made to an existing provision or when a new provision is introduced since lack of clarity, or wording that lends itself to different interpretations, become a stumbling block for smooth implementation of government policies.

Conclusion

There have been some big bang announcements like the French *Rafale* deal during PM's France visit but subsequent controversy about this deal raised suspicion about sustainability of such knee-jerk actions to support 'Make in India' campaign without having a foolproof regulatory and procedural framework in place. PM Modi, the master dream weaver and Manohar Parrikar, the technocrat, were expected to give impetus to defence procurement and indigenous defence manufacturing by resolving policy and regulatory issues dodging the system but it has taken inordinately long and much awaited reforms are yet to see the light of the day. DSA

Col Sanjeev Dalal (Retd)

The writer has spent more than 26 years in Indian Army where he was incharge of Acquisitions in his last tenure. An alumnus of Defence Services Staff College, Wellington, he is a domain expert in Camouflage and Chemical Biological Radiological Nuclear (CBRN) Defence.

MAKE IN INDIA FOR THE WORLD

CREATING A COMPETITIVE INDIAN DEFENCE INDUSTRY

India's capital expenditure has risen from INR 37,462 crore in 2007-08 to INR 94,000 crore in 2014-15. Indian long-term military equipment modernisation plan till 2027 (15 year LTIPP starting from 2012) as well as usual equipment necessities put the size of the Indian arms market worth more than US$ 200 billion by 2027. It is lucrative enough for any arms or component manufacturer of any size – Indian or foreign.

Conventional wisdom suggests that great powers invariably possess big indigenous arms industries, apart from robust economic might, consistently evolving scientific innovation ecosystem and relatively stable polities. Degrees of such ingredients of national power may differ, but nevertheless are necessary attributes at all times. India aspires to be a great power and certainly has demonstrated two of the ingredients thus far – growing economy and stable polity. If it really wants to reach the high table, it has to look in-depth into the other two – a globally competitive national arms industry and a complementing scientific prowess.

Overcoming Hurdles To National Power

This is easier said than done. Consider these: India's economy and its accompanying fundamentals seem robust and show signs of promise, but its arms industry has not been able to meet growing demands of its armed forces leading to an 'import dependency' situation; its polity is stable, yet it's scientific and innovation ecosystem does not do justice to its potential. Growing gaps between these elements of power need to be reduced and alternatives for improvement need to be contemplated, if India wants to translate its resources into power.

It is in this context that 'Make in India', a concept in its infancy at the moment, needs to be defined, put in a framework and seriously pursued as a policy. If one looks at the larger national economic landscape, this concept has a fertile domain to flourish – Indian Defence Scientific and Industrial (hereafter, DSI) Base. Eventual success of 'Make in India' in its DSI base would not only lessen Indian arms import dependency, be a part of global supply chain, but more importantly, complement national manufacturing capacity building process through both spin-off and spin-on effects.

Two intertwined fundamental questions need to asked here: a) should an attempt be made to put 'Make in India' as a mandatory requirement in Indian defence production and procurement processes, and b) if so, how and in what framework? I place below a set of arguments and suggestions for further consideration.

Locating 'Make in India' In Defence Sector

Locating 'Make in India' concept and its application in defence production must be examined through an assessment of existing Indian DSI base. India has a sizeable DSI base with nine state-owned defence public sector units (DPSUs), forty one ordnance factories (OFs), fifty one defence S and T laboratories under DRDO, which cumulatively cater to the demands of equipment and services for the armed forces. In addition, about a dozen big and more than 8,000 micro, small and medium (MSMEs) Indian private companies are also directly or indirectly involved in defence production. DPSUs like HAL and BEL and OFB have large private vendor base, each numbering close to 1,000. Some of the big Indian private companies also engage smaller companies as sub-vendors. While DPSUs and OFs contribute about 90 per cent of the total domestic defence manufacturing, the same from the private sector is not known, primarily because of lack of data (very few Indian private companies get stand-alone orders, while bulk of them are sub-suppliers to the DPSUs, OFs or foreign OEMs).

Arguments for participation of Indian industries through 'Make in India' in defence sector are obvious for a variety of reasons. First, to help decrease arms import dependency to a minimum level. Although no credible data is available to measure exact level of import dependency, it is generally agreed that India's reliance on imports is about 70 per cent, which needs to be reduced to at least 30 per cent or below. Second, to improve competitiveness of Indian DSI base, which can be achieved through a combination of complementing industries – state-owned, private and foreign. If self-reliance objectives have to be met, the Indian industry has to double its industrial efficiency level to the level of INR 30,00,000 per employee (which, in turn, could have potential for 0.8 to 1.2 million new jobs in defence sector). Third, increased competitiveness of indigenous industries engaged in defence production would have significant impacts on national manufacturing and R&D through both spin-on and spin-off outcomes. Gross value of output of MSME manufacturing in India was INR 1,80,976 crore in 2012-13, which accounts for 7.04 per cent of GDP. If Indian private sector's contribution to defence increases, its contribution to national manufacturing could touch 1 per cent of GDP in the next decade. Last but not the least, a vibrant Indian DSI base could eventually become a critical national asset, whose importance might surpass those of major contributors like services, manufacturing and

infrastructure. In sum, 'Make in India' is a concept, whose time has come for real time application in Indian defence sector.

In addition, nurturing the Indian private sector in defence production needs three important considerations: a) clear policy direction; b) an assured market; and c) supportive institutional mechanisms (not necessarily in the same order or preference). While a) and c) will be examined in relevant sections, it is important to ask the most important question: Is the Indian defence market lucrative enough for the Indian private industry?

Monetarily Worthwhile For Private Sector

Indian defence industry's competitiveness and viability depends on the kind of market that it sees for its participation. Let us consider the domestic arms market first. Indian defence expenditure has grown at an average of 13 per cent per annum from 2007-08 till 2014-15 and currently stands at INR 2,46,000 crore (which is a mere 7 per cent increase from previous year's budget and accounts for about 1.8 per cent of GDP). However, both capital (large acquisitions) and revenue procurements are substantial in the budget, which account for more than 50 per cent of the total expenditure. India's capital expenditure has risen from INR 37,462 crore in 2007-08 to INR 94,000 crore in 2014-15. Indian long-term military equipment modernisation plan till 2027 (15 year LTIPP starting from 2012) as well as usual equipment necessities put the size of the Indian arms market worth more than US$ 200 billion by 2027. It is lucrative enough for any arms or component manufacturer of any size – Indian or foreign.

If this is not enough, let us look at the global indices. Global military expenditure has crossed US$ 2 trillion in 2014, indicating further increase in future. While major arms industries may face the heat because of intense competition, one may still find bright spots for the Indian industries as exporters as well as part of global supply chain. 'Export' element of Indian industries thus needs serious consideration for future.

The Story Thus Far

Unlike elsewhere and often not realised, the Indian defence procurement domain has structurally included the domestic private sector and thus 'Make in India', is a major participant. Ever since India decided to open up its defence sector for private participation in 2002, after strong recommendations from the Group of Ministers' Report on National Security Management, incremental as well as major structural changes have been made in Indian defence procurement procedural arrangements (through Defence Procurement Procedure, hereafter, DPP) to define and accommodate the domestic private sector in defence. Between 2002 till date, the DPP has gone through seven revisions, an addendum, while the next in line – DPP-2015 – is awaited. While provisions within DPP, including categorisation, offsets, ToT and others have directly impinged the participatory aspects of Indian industries in defence, policy measures in complementing domains like Department of Industrial Promotion and Policy (DIPP), Ministry of MSMEs, Skill Development and others have also indirectly and cumulatively impacted the concept of 'Make in India' in defence sector.

A careful examination of all DPPs (from 2002 to 2013) indicates sets of positives and accompanying problems. Some positives are placed here. First, introduction of specified procurement categories – Make, Buy (Indian), Buy and Make (Indian), Buy and Make and Buy (Global) – out of which three are directly related to 'Make in India' with more weightage. There is a visible improvement in Indian vendors getting more contracts in recent times. For example, in 2014-15, out of 56 Acceptance of Necessities (AoNs) awarded by the Defence Acquisition Council (DAC) for a total value of INR 1,17,829 crore, 40 AoNs with a total value of INR 1,11,070 crore (which accounts for 71 per cent in numbers and 94 per cent in value) came under Make, Buy Indian and Buy and Make Indian categories. Second, provisions like directed offsets have been fine-tuned to encourage more private participation through incentives like offsets multipliers for MSMEs etc. Third, necessary administrative and financial provisions are being addressed through successive DPPs. And last but not the least, procurement procedures of DPSUs, OFs, DRDO – for both revenue and capital items – are also revised from time to time.

Deba R Mohanty
The writer is a defence analyst and heads a New Delhi based defence research firm.

Despite several rounds of revisions, an objective analysis of location of 'Make in India' still eludes us. The Indian private sector is not able to fathom the direction in which Indian defence sector is moving. Problems like definition, too many categories and their overlapping administrative complexities, ill-defined financial incentives, complex eligibility criteria and most importantly, absence of private sector representation in formal administrative and institutional arrangements in defence procurement cumulatively puts it in a disadvantage situation. Ask any industry captain or owner of a small firm about their assessment of the situation; invariably you will get a positive response formally and a negative one informally. That sums up the story of 'Make in India' thus far.

The Unfolding Story

There is a serious attempt, for the first time, by the new government to embed the concept of 'Make in India' into reality in Indian defence sector. It is evident from the fact that an Experts Committee, constituted in May 2015 under the chairmanship of Dhirendra Singh (hereafter, Singh Committee) to recommend changes to DPP-2013 as well as facilitate 'Make in India' in defence sector through DPP (DPP-2015). Singh Committee has submitted its voluminous report to the MoD, which is now in public domain and at the same time actively deliberated by the MoD. Its five recommendations on the role of private sector in general and facilitation of 'Make in India' in DPP in particular merit attention here.

First, DPP must retain procurement categories but give mandatory preference to Indian vendors, which needs to be pursued vigorously. Second, DPP must put in an effective mechanism to assess and increase indigenous contents in different defence contracts. Third, DPP must propose exchange rate variation (ERV) to Indian vendors. Fourth, it must define Indian vendor and clearly define the role of MSMEs. Fifth but not last, it should opt for a partnership model, by including Strategic Partners from the private sector to boost complex technological and system integration capabilities. In all these, the DPP must not lose sight of the critical role to be played by smaller manufacturers, who must be encouraged to deepen their participation.

It is certainly premature to assess possible impacts of 'Make in India' being translated from a slogan to reality in Indian defence sector currently, suffice to mention here that if provisions related to three issues – mandatory categorisation preferences, financial incentives and preferential treatment for MSMEs – are seriously pursued, Indian defence industry will not only produce for its own needs, but is capable enough to be a viable arms exporter and a formidable part of global defence manufacturing and technological supply chain in coming times. Revised DPP-2015, as and when it comes, thus needs to be examined further. DSA

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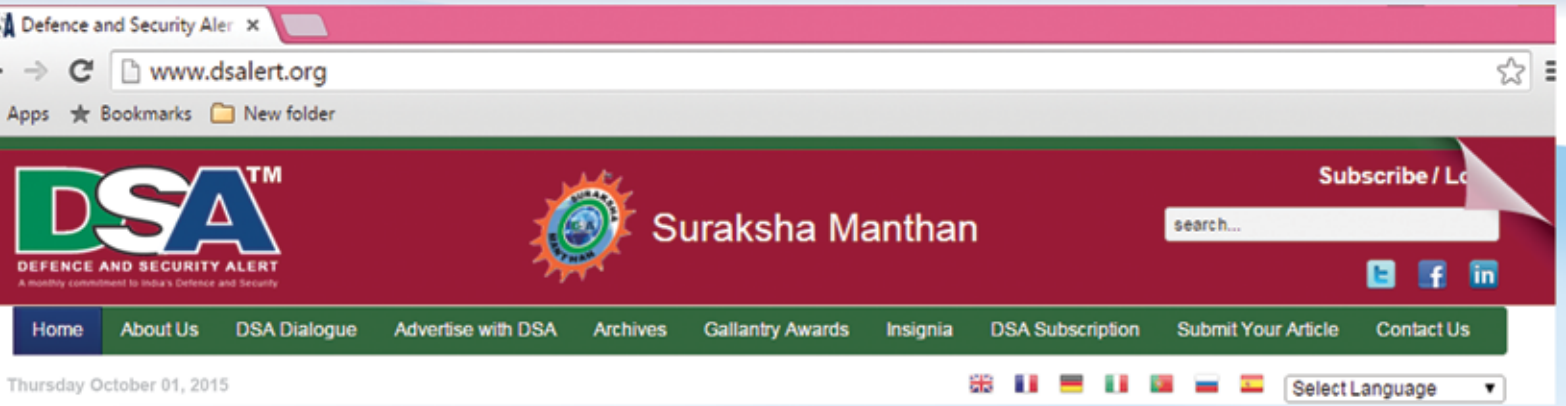

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