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Foundation

DEFENCE PREPAREDNESS

A STUDY GROUP REPORT



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Preliminaries

The Approach

The purpose of constituting the *Study Group on Defence Preparedness* was to delve into the issues confronting the nation's defence preparedness. The focus herein was directed at preservation of the nation's territorial integrity in the face of China's persistence in realigning, unilaterally and by the use of military force, the traditional Indo-Tibet Border; the long-continuing military confrontation astride the India-China Line of Actual Control (LAC) is an obvious preliminary to China's that grand design.

In its quest for possessing a 'word class' military that can secure its lead role in global affairs, the People's Republic of China (PRC) has been seriously engaged in building up a vast inventory of latest technology and highly lethal military arsenal. Considering the Chinese Communist Party's (CCP) explicitly articulated purpose of satiating its hegemonic ambitions through acts of militarist usurpations, that build-up cannot be but a subject of much concern among the

PRC's intended targets. Needless to state that India is one of its primary marks.

Strategic Equation in the Sino-India Context

Fair amount of details pertaining to the People's Liberation Army's (PLA) build-up are available from open sources. China's Ministry of National Defence publications and Defence White Papers, US Department of Defence Reports, Japan's White Paper, Taiwanese and South Korean strategic observers and their reports, and research papers published by various US and Europe based think tanks are some such sources. These reports and analyses usually focus on:-

- a. PLA's organisational reforms and possible military strategies. Herein, revision of PLA's operational tactics to best exploit the impressive characteristics of its modern instruments of war-waging is considered.
- b. Reduction of the regional neighbourhood of smaller and militarily modest nations

to a state of tributaries is the PRC's declared objective. Banishment of the Western Powers' influence and partnerships in China's neighbourhood is intrinsic to that objective.

- c. Operational characteristics of modern military hardware that are in various stages of induction into the PLA.

Notably, most such reports and analyses are focused on Western power's concerns. Issues specific to India are not focused as such, not in the open domain. No doubt, the Indian defence establishment remains active in delving into its specific strategic concerns, and even more. However, unlike most advanced nations, practically nothing of such discourses, apart from simplistic reports and cursory updates from designated mouthpieces, are visible to the nation's strategic fraternity at-large. That precludes unencumbered considerations over India's contemporary concepts of *task-strategy-weaponry fusion*. It also leaves the fraternity bereft of unencumbered overview of the pros and cons of various options while making recommendations that might be considered prudent at a point of time.

The instant Study was intended to address that gap in the nation's strategic discourse.

Constitution of the Study Group

The Study Group was constituted for an eminent group of military and civilian strategists to undertake in-depth analyses of

the challenges and practicalities of managing the continuous build-up of China's military confrontationist agenda astride the Indo-Tibet border, in the Bay of Bengal and in the Arabian Sea. Various facets of recent military confrontations and posturing – in West Asia, West Pacific-Indian Oceans, Ukraine and Armenia – that offer insights into various options open for the Indian defence establishment to deal with the extant conflict situations were discussed herein under four sessions. Matters of impediments against fusion of relevant operational commitments with the accessible instruments of contemporary warfare were also considered.

Note: Membership of professional experts in various domains of defence preparedness associated with the Study Group is at **Appendix 'A'**.

Study Proposal

The Study was aimed at:-

- a. Taking stock of recent inductions of modern weaponry and other instruments of war into the PLA's war inventories.
- b. Examining the PLA's possible employment of such inventories in any future Sino-India military confrontation on ground, sea and air.
- c. Considering the possible tactical and technical counter-measures to address the adverse asymmetries to own favour.

Format

The **Study Group on Defence** conducted a series of four round table sessions for the members to consider the range of the Indian operational vulnerabilities, as well as the opportunities, against the PRC's military aggression. Suggestions and advisories emerging from such confabulations are summarised under the following heads for the defence decision makers to consider:-

1. Part I: PLA's Growing Might and the Resultant Asymmetry;
2. Part II: PLA's War Wherewithal and Counter-measures;
3. Part III: Realities, Implications and Security against China's Belligerence:-
 - a. Aspects of an 'Altered' LAC;
 - b. Security against China's Belligerence: Air Aspects;
 - c. Maritime Aspects: Security against China's Expanding Naval Presence in the Indian Ocean;
4. Part IV: Defence Logistics;
5. Part V: Defence Industry.
6. Observations and Recommendations.

Part I : PLA's Growing Might and the Resultant Asymmetry

Political Level Considerations

1. China is preparing for military confrontation with the US. It sees *India as an extension of the US threat*. But we have no lien over the US' policies.
2. In trying to catch up with the US, the PRC is the only among the major powers to have a continuously rising defence budget. Resultantly, it has established huge superiority over India's military power.
3. The *Chinese threat is multi-dimensional*. It spans across Pakistan, Sri Lanka, Nepal and Bhutan. Besides, we are faced with a No-War-No-Peace (NWNP) situation in perpetuity. We need to ponder as to how to counter that.
4. India's relationship with Russia is under test. For a year India is unable to make payments due to Russia.
5. Apart from weaponry and equipment, the holistic aspects of China's military might too need serious considerations.

Else we will be surprised, politically and militarily.

6. In containing China's threat, we need to consider as to *how would our strategic partners respond to our defence requirements?* Also we have to consider as to how can we secure US' support and what might the US want from us.
7. We need to examine if neighbours would offer logistic support to the Indian forces.
8. *Notion that own vulnerability can be met through non-military means is misplaced*. However, many times that notion results in the government withholding or slowing down the process of defence build-up and modernisation.
9. Indian political establishment will not touch the nuclear angle.

Implications of Fighting a Stronger Enemy

1. PRC's priorities are Taiwan, Senkaku Islands, the South China Sea and the

- Indo-Tibet Border, not necessarily in that order.
2. PRC's objective is to bring India into the orbit of its dominance and make it easy for it to replace US' leadership the Indo-Pacific. Territorial encroachments are but a sub-set of that objective. India will remain obliged to contest such encroachments. Earlier than later, therefore, PRC's engagement in '*short of war*' kind of operations against India is inevitable.
 3. PRC will prefer to operationally '*disable*' our forces rather than getting into a protracted, gruelling combat situation. Conflict escalation ladder could still get triggered by India's stout resistance against China's aggression - to begin with border skirmish upwards to sectoral and hi-tech war.
 4. PLA's missile, Intelligence, Surveillance and Reconnaissance (ISR), Electronic Warfare (EW), cyber and satellite capabilities are overwhelming. Its level of intelligence about own capabilities and deployments is very high. Indian targets would be well known for the PLA to be engaged with missiles and to isolate our defences.
 5. For the coming years, we have to manage such *huge disparities* within our limited capabilities.

6. Even small territorial losses would puncture the PRC's grand image.

Responses to Adverse Asymmetry

1. India's military power is unlikely to match up with that of the PRC. Yet, to some extent, it will be possible to cover much of the PRC's military superiority by harnessing training, terrain, defence infrastructure, tactics, targeting of value assets, cyber zone operations, and weaponry like the Brahmos, EW Systems (Jammers), low-cost radars, air craft and air defence.
2. There is the need for the Government to spell out as to what exactly is expected from its military forces. The *mandate* needs to be practical and fiscally supported due operational preparedness.
3. We have to decide as what kind of war we should prepare for short, protracted and riposte actions? It would be pragmatic to continue with positional warfare, with options for riposte at suitable points.
4. India's adverse asymmetry in ground, sea, air and space warfare assets would have to be addressed by comprehensive and brisk military build-up.
5. PRC's superiority can also be limited by forging *strategic partnerships*.
6. Timely upgrades of weapon and

equipment to match the mandated military objectives may be preferable through adoption of 'government-to-government' processes.

7. *Tri-service jointness* would multiply our present as well as future capabilities. The transition therefore needs to be accelerated.
8. *Atmanirbharta* programmes need exceptional scales of dispensations at the policy, procedural and implementational levels. Strategic partnerships might be tapped even at the cost of having to accommodate limited expediencies.
9. The nuclear dimension should not be activated.

10. For some years, we have to manage the border stand-off situation while dominating the LAC at the cost of high attrition in men and material.

11. We need 24x7 surveillance capability to monitor and act against PLA's activities on land and sea.
12. Conjoined adoption of regular and '*irregular*' warfare strategies, on land and sea, would be an effective way to cover own limitations.

Note: A brief on PLA's Growing Military Power: Implications and Counter-measures is attached at **Appendix 'B'**.

Part II : PLA's War Wherewithal and Counter-measures

Theme

The PLA has inducted and deployed a formidable inventory of war wherewithal astride the LAC. These weapons and equipment are meant to be operationalised in any future Sino-Indian military confrontation on ground, sea and air. With that in view, the discussion was focused at:-

- a. Manners in which the PLA might employ its military capabilities at the LAC and Indian Ocean theatres.
- b. Possible counter-measures to the PLA's overwhelming power differential over own forces and operational asymmetries it is capable of imposing.

Course of Discussion

Situation along the Indo-Tibet Border

1. Astride the 4000 plus km of the LAC, the PLA has deployed 50-55 Combined Arms Brigades, mostly opposite Eastern Ladakh and Sikkim-Arunachal Pradesh LAC. With up to 10-12 superiority

needed, the PLA can undertake offensives at 4-5 points anywhere along the LAC.

2. PLA is training hard for high-altitude operations. The modernised PLA's training may be a question mark, but it will make that up with massive deployments of force-multipliers.
3. PLA has developed high capability for heli-insertion of forces. Besides high numbers of standard helipads, PLA has also developed four major heli-drones for high altitude operations. Portable air defence missiles are needed to counter that.
4. PLA Rocket Force (PLARF) has deployed large arrays of surface-air missiles along the LAC. It is also capable of launching long range missiles against own forces and installations from well within its own areas.
5. To survive PLA's missiles targeting, own installations and conventional missiles

need high grade air defence and dispersal mobility.

Contestation in the Air

1. In airpower, the PLAAF has a formidable superiority over the IAF, and the Chinese know that. Such overwhelming superiority also applies to air defence, space, ISR, Unmanned Aerial Vehicles (UAV), cyber, and Anti-Access Area-Denial (A2AD) domains.
2. PLA Air Force (PLAAF) has adequate numbers of operational air fields (12) and ALGs along Indo-Tibet border belt. Most of the air fields have hardened aircraft pens. In these aspects, we too are somewhat reasonably placed.
3. Along the Indo-Tibet border belt, the PLA has the capacity to employ a range of stand-off air weapons, Surface-to-Air Missiles (SAM), Cruise Missiles, LASER weapons, and ISR-linked real-time target acquisition and engagement capabilities to establish a situation of A2AD over Tibet.
4. PLA will use deception in full measure by mixing its targetable assets with possibly 25 percent of mobile decoy signatures.
5. With effective A2AD in place, the PLAAF is likely to deploy giant bombers like the H-6 with powerful bombs to degrade India's capacity to defend and retaliate.

Sea Warfare

1. The PLA Navy (PLAN) has acquired Y-J 21 Hypersonic missiles (10 Mach, 1500 km) for its Type-055 Cruisers and DF-21 D ICBMs (3000 km). It has nine nuclear submarines (SSN). Even one of its SSNs based at Djibouti could stretch India's capacity to counter PLAN's operational heft.
2. India's advantages lie in her internal lines of communications which could give the PLA Navy a close run. Recourse to the weapons of weaker powers – like midget submarines, surface, underwater and unmanned munitions etc. – would help in creating own asymmetry.
3. In any military confrontation, higher numbers of deployable assets would matter under all circumstances.

Defence Policy

Amb Verma highlighted the following:-

1. China sees India as an extension of its nemesis, the US. With her large land border that is isolated from outside support, India is the US' most strategically vulnerable partner - and thus a suitable target for China to strike at.
2. We have to examine as to how would China fight and how would it prepare. There is a need to list out our hierarchy

of military vulnerabilities and examine as to how could these be dealt with. The Indian military could thus draft a strategy based on realism of adverse asymmetry and claim budgetary support accordingly.

3. Own Government imbibes a wrong impression coming from the external affairs fraternity, to hope that military vulnerability can be covered by external factors. It is needs to be understood that is just not true.

Cyber Warfare

Dr Gulshan Rai suggested that as a matter of policy, cyber aspects be integrated and coordinated into the military's operational planning.

In Sum

In the context of India's defence preparedness, the Meeting concluded that:-

- a. There is a critical level of war wherewithal that the Indian military is required to hold to be able to deter a stronger adversary.
- b. Achievement of counter-asymmetry against a stronger adversary requires additional commitment of resources.
- c. Technological upgrades are needed to cover specified fields of inadequacies.
- d. Appropriate directives and time lines for various objectives of national defence have to be spelt out.

Part III : Realities, Implications and Security against China's Belligerence

Aspects of an 'Altered' LAC

Situation along the Indo-Tibet Border

Having attained its modernisation goals over a period of quietude along the borders, China finds the 'time is ripe' for realisation of its long-term territorial ambitions. Thus, over the past two decades, it has, with increasing frequency, pushed-in to occupy territories along the Indo-Tibet Border. Parts of the border belt which had so far been kept under surveillance through periodic patrols from both sides have now been physically occupied by the Chinese forces, thus blocking Indian patrols' access to such areas. Notably, China has been persistent in refusing to spell-out its perception of the Indo-Tibet Line of Actual Control LAC. It has also refrained from indicating its final territorial ambitions. China has thereby kept its expansionist options open.

In the *Western Sector*, China has more or less achieved what could be its intermediate objective, that of assuming control up to the Zhou Enlai's proposed '1959 Line'. Whereas

in the *Central* and *Eastern Sectors*, the intrusions are shrouded under its 'disputed alignments' of the Himalayan watershed/ the Mc Mahon Line. Besides shifting the six decades old (albeit never formalised) border posture, China has committed to build up, all along an 'altered' LAC, permanent habitats and extensive military logistic infrastructure for its forces' at an astonishing pace. The strong military posture is further reinforced by establishment of 'border villages' and settlement of local civil population.

The obvious inferences are:-

- a. China's LAC push-back is a recurring exercise. Its intrusions are practically impossible to be reversed.
- b. Follow-up instalments of encroachments across one or more sectors of the LAC should be expected. Indian counter-actions could lead to more rounds of skirmishes. Escalation would have to be catered for.
- c. China has not spelt-out its final territorial objectives. To that extent, it has kept its

options open to exploit the emergence of opportune conditions.

It is time for India to shed any hope of China reconciling to its weaker neighbour's cause, and prepare to manage a *permanent strategic adversity* along the Indo-Tibet Border.

Discussion was focused upon the aspects of *Realities, Implications and Security of an 'altered' LAC*.

The Course of Discussion and Recommendations

Ground Realities astride the LAC

1. The factual position along the LAC was described as follows:-
 - a. The border tranquility agreements are ineffective in absence of any defined LAC. That permits the China to make its partisan interpretations of the agreements.
 - b. The 'Buffer Zones' are approximated belts of land astride the LAC created to separate the two forces is. Both, the undefined LAC and the Buffer Zones, however, do not change the respective side's formal territorial claims.
 - c. In *Easten Ladakh*, both sides have previously recognised Depsang and Demchok as 'Disputed Areas'. However, the Indian Government's identification of Patrolling Points 1 to 65 has left

nearly two-third of the Depsang Plains outside own forces' access.

- d. In the Eastern Sectors of *Sikkim* and *Arunachal Pradesh*, China rejects the sanctity of the McMahon Line, even while contesting its ground alignment. To contest certain areas under India's control, China aligns the line of Himalayan watersheds differently.
 - e. Occasional overlaps of patrols have happened from both sides, when both patrols have avoided any face-off. A recent change is that the Chinese forces' have deliberately engineered permanent occupations across the LAC, leading to the current stand-offs.
 - f. In the coming period, likelihood of China's mounting pressure across the Arunachal Pradesh border should be expected.
2. Within the above considerations, India's current posture was found to be a prudent option for the time being. It keeps alive the possibility of finding some mutually acceptable arrangement. Conversely, jingoist rhetoric tends to make it hard to secure a bargain.

Situation in the Western and Eastern Sectors of the LAC

3. Implications of China's alteration of the pre-existing border situation were discussed as follows:-

- a. China's definition of the '1959 Line' is a combination of two factors: One, the extent of their advance into the Eastern Ladakh in 1962; and two, the line of heights that dominate the lower reaches of the slopes and valleys in the vicinity. It is a line of high ridges that confine deployment of Indian forces to the lower reaches of the terrain. Intrinsic tactical domination of Chinese positions is ensured thus.
 - b. China's dispute over the area Charding-Ninglung Nallah in Demchok Sector has similar motive. Here, China's occupation of Charding La heights gives it full domination over the Charding slopes area as well as its adjoining Indian territory along the Indus Valley.
 - c. In the North-East, China's attempts to extend its territorial control across the well-defined Sikkim and Arunachal Pradesh borders are also triggered by similar motivations.
 - d. 'Buffer Zones' would restrain the Indian forces' from contesting any Chinese forces' advance to the latter's intended but unspecified alignment of its version of 'line of actual control'. The PLA's occupation of a domineering 1959 Line and creation of Buffer Zones are the major changes which would keep India in perpetual tenterhooks.
4. The situation obliges India to maintain, and even build-up her military deployment astride the entire stretch of the now altered LAC. And that brings another set of quandaries for India's defence planners.
- Counter-measures to China's Territorial Aggressiveness**
5. Describing the 'LAC plus' as a 'new normal', Amb Venkatesh Verma put China's belligerence as India's key problem that needs strong and long-term military deployment all along the Indo-Tibet Border, with due patience and perseverance. It was pointed-out that China sees India as an extended and vulnerable front of the United States, and would therefore remain ever-poised to activate its anti-India belligerence to undermine US interests.
 6. In the context of possible counter-measures against China's aggressive designs, the discussion led to the following inferences:-
 - a. For the time being, the situation along the Indo-Tibet Border has stalemated. But China can tip it off any time. It is certain that in the coming days, the pressure on Arunachal Pradesh Border will mount. In time, Pakistan too would regain enough strength to project a two-front situation against India. There

is a need to remain sensitive to such likelihoods.

- b. Any kind of drawback from the LAC stand-off is not an option. However, long-term and asymmetric deployment would degrade India's military capabilities and that would further undermine India's cause. Therefore, there is a need to ease the troops' living conditions, revise deployment patterns, regularise field tenures and upgrade the system of maintenance, replenishment and regular replacement of worn-out military hardware.
 - c. It needs to be appreciated that ISR capabilities or various technological tools cannot by themselves substitute for availability of readily deployable forces. Decision makers have also to be sensitised regarding the dangers of stretching the military structure too far.
 - d. To make it possible to sustain the necessary LAC deployment and for ease of rotation without upsetting India's strategic balance, tenuous as it is, new formations would have to be raised. India's intelligence capabilities too require substantial upgrade to harness the military's full potential for combat.
7. It was surmised that China will continue to apply its squeeze on India on various fronts. In that, the squeeze on the border

front is the most serious one. India's continental capabilities, specifically the intelligence capability, therefore, need priority build-up. Dialogue to ease the bellicosity should continue all the while.

Standing-up to Aggressiveness astride the LAC

8. Determining factors in standing-up to China's aggressive moves as are listed as follows:-
 - a. Enhanced military deployment, complimented by adequate habitat infrastructure. However, it is impractical to physically deploy to cover all the vulnerable locations along the entire LAC-McMahon Line. A combined and complementary deployment of troops and technology is needed.
 - b. Deployment of adequate numbers of high-technology surveillance and early warning assets like satellites, air-borne radars and surveillance equipment and unmanned aerial vehicles for near-continuous coverage is mandatory for border security. Cognisance be taken of the fact that no technology works under all conditions; redundancy is therefore obligatory. Build-up of an extensive data/knowledge base is also a pressing requirement.
 - c. High-technology would permit reduction in physical deployment of

troops from inhospitable frontline areas. That would enable creation of a second tier of well dispersed troop concentration areas as well as peace-time cantonments in relatively better hospitable locations like Leh. These would also help in reducing the pre-deployment periods of troops' moves and acclimatisation. Development of cantonments requires creation of educational and family station infrastructure.

- d. Revised deployment of forces on the frontline have to be complimented with quick transportation capabilities to deploy in threatened locations/areas at short notice. Extensive use of assault-breaker aggregators should be considered to cover such deployments. Reactive deployments are to be complemented by restructure of tour-of-duty tenures of the personnel.
 - e. Development of additional numbers of air-fields is needed to meet logistic, transportation and air defence responsibilities. Adequate resources are needed for air defence of defiles and bases that are vulnerable to interdiction - Zoji La, Rohtang Tunnel, Leh Garrison, for example.
9. *A significant recommendation is not to commit to any 'confidence building measures' till own capabilities of surveillance*

and transportation/build-up is enhanced to match those of the Chinese.

Security against China's Belligerence: Air Aspects

Build-up of ISR Capability

1. Near-real time ISR capability is a key pre-requisite to India's territorial security against China's opportunist encroachments. For that, there is a need for many more surveillance and communication satellites for regular intelligence and early warning functions. With the military hierarchy already sensitised over this pressing requirement, it is for the Government, the DRDO and the ISRO to resolve their contentious issues and get on with the task with due alacrity.
2. There are hurdles to be cleared with regards to foreign components of in-service Synthetic Aperture Radars (SAR). Acquisition of Infra-Red (IR) Satellites within the ambit of an overarching Space Based Infra-Red System (SBIRS) is also a necessity for seamless surveillance.
3. ISR capabilities are but adjuncts to operational actions. Optimal deployment for ISR has to be complemented with a potent mix of A2AD fighter-air defence aircrafts, radars, high capacity drones and UAVs.

Optimisation of Air Combat Capabilities

4. Measures are at hand to build-up the Air Force's combat components, severely depleted as these are. The effort needs to be assiduously sustained.
5. Meanwhile, shortening of the turn-around/time-over-target periods and realisation of longer operational ranges would help in optimal utilisation of scarce air-combat resources. That is also needed to cover the limitations of fuel vs armament payload capacities of the Indian Air Force's proposed mainstay combat inventory, the Light Combat Aircraft (LCA), and the consequent effects on the Air Force's operational ranges.
6. To bolster redundancy and operational flexibility of the Air Force, the existing air bases in the Western and Eastern Sectors need to be upgraded by construction of additional/alternate runways. Besides, additional Advance Landing Grounds (ALG) be constructed closer to the operational areas. Unmanned Aerial Vehicle (UAV) bases need to be relocated closer to the operational areas to enhance their loiter periods.
7. Cantonments closer to the operational areas in Western and Eastern Sectors need to be constructed to base air combat assets closer to the very high-altitude operational areas along the LAC.

These Cantonments would facilitate creation of radar, surveillance, air defence and maintenance bases closer to the operational areas and cut down the induction and acclimatisation timings.

Maritime Aspects: Security against China's Expanding Naval Presence in the Indian Ocean

Situation in the Indian Ocean

China's brisk efforts to spread its influence in the Indian Ocean Region (IOR) carries international ramifications. It is certain that over time, China would seek to bolster its increasing *influence* into *domination* over the IOR. That would invariably drive the Region into an environment of multi-point frictions, and in the process turn India's periphery into a potential fireball. India, with her geographic centrality and strategic outreach, would therefore have no choice but to assume an active role in the affairs of the IOR against China's overbearing contestation.

It takes many decades to build-up oceanic power. Therefore, the fore-stated inevitability leaves India no option but to accelerate her efforts to acquire adequate capabilities to attend to her strategic ordinations in the IOR. In the meantime, India remains obliged to devise suitable courses of actions to be able to attend to her concurrent geo-strategic obligations.

Discussion here was focused upon the *Realities, Implications and Security related to managing the growing Chinese presence in the Bay of Bengal-Arabian Sea / Indian Ocean.*

Build-up of the Peoples Liberation Army Navy (PLAN)

1. Developments over the past 15 years or so in India's maritime areas of interest to be taken cognisance of are listed as follows:-
 - a. The PLAN is emerging as a dominating force in the Indian-West Pacific Ocean. It aims at possessing 400-ships in the near future, and even if its fleet of front-line battleships would be much smaller, that would still be a formidable force to dominate the Indian Ocean.
 - b. The PLAN boasts of a huge maritime surveillance capability. It has briskly engaged in over-water as well as under-water survey; presently, nine underwater ridgelines are under survey which accords China the right to name the underwater feature in *Mandarin*. PLAN has also began banishing Indians from fishing areas in the Arabian Sea. With increasing Maritime Domain Awareness (MDA) capability and gradual upgrade of its ports at Djibouti, Hambantota, Gwadar etc., the PLAN's run would prevail in India's maritime vicinity.
 - c. China is in the process of strengthening the Pakistan Navy in terms of submarines

and various other combat assets. The purpose is to employ Pakistan Navy as its proxy to dominate the strategically significant North-West Arabian Sea.

The Indian Navy: Commitments vs Resources

2. China's maritime threat needs to be defined. Time-lines of build-up of own naval capacity should be specified accordingly.
3. Over the years, Indian Navy's commitments have been on steady increase. Whereas the availability of force level has been declining as there has not been corresponding commissioning of new ships to build-up the force level. Nuclear submarines (SSN) and under-water domain awareness are the two most critical deficiencies in the Indian Navy's combat potential.
4. Joint exercises – display of force actually - with friendly and more advanced nations are imperative to keep the PLAN in check. Indian Navy's lack of adequate numbers and varieties of modern ships would be more and more telling as its deployments for joint exercises rise in the coming days.

Recommendations: Immediate-term Measures

5. Needless to emphasise, accelerated build-up of the Indian Navy is imperative to

India's national security. That endeavour will take time to come to fruition. Meanwhile, the following measures would help:-

- a. The current momentum of acquisitions and production be vigourously sustained.
- b. Acquisition and application of high-technology is the key. Partnership

agreements with advanced entities should not be allowed to stall.

- c. Naval diplomacy is of utmost importance. Formation of an US-France-India Trilateral is recommended. Further strengthening of bonds with the neighbourhood navies is most desirable.

Part IV : Defence Logistics

Focus of Discussion

The Study Group took stock of India's defence logistics and drew inferences over our overall military preparedness. The discussion focused on the following aspects:-

1. China and Pakistan have one converging aim. Our existing force ratios would not suffice in managing a two-front war.
2. Our extant stage of defence transformation is also a period of high vulnerability. Challenges are in terms of management of transformational changes, upgrade of supply chain, assimilation of technology, management of Russian origin equipment and rationalisation of the Atmanirbhar schemes, while maintaining full combat capabilities simultaneously.
3. India's defence preparedness should pose sufficient deterrence against military invasion or any major attack by raising the enemy's costs of aggression. Our military aim could therefore be to resist and prevent the enemy from gaining deep penetration into own territory. That would include the capability to support limited offensive actions against the aggressor. But even for such limited military aim, more defence logistic capability is needed than what we actually have.
4. Adaptation to modern warfare with high degree of resilience are the imperatives. Longer states of war should be expected. There is thus a need to resuscitate the somewhat moribund system of manpower reserves as well as reserve stocks of warlike equipment. With a belligerent China looming menacingly, these has to be key measures towards enhancement of defence preparedness.
5. Modernisation also requires uplift of the threshold of the soldiers' technological competence without compromising on their physical attributes.
6. A robust platform of defence logistic is a top imperative for successful campaigning in war, as it is under the state of perpetuating NWNP. Strengthening our logistic supply chain is therefore fundamental to India's

defence preparedness. Own logistic infrastructure would have to be scaled according to the above consideration.

7. For the abovementioned purposes, more so to strengthen our defence logistic capacities, the need is to articulate a National Security Strategy and a National Defence Strategy. These would provide the right guidance to the nations defence and finance establishments, the military forces and the defence industry. There is a need to promulgate legislations to support projects related to national security.
8. There is an India-specific maritime dimension to land operations. To exploit its advantages, India needs to build-up corresponding naval capability. Participation in strategic partnership operations in the Indo-Pacific Region, including the freedom of navigation operations in the South China Sea, would bring us due advantages.

State of Ground Logistics

1. China's war objectives are Daulat Beg Oldie (DBO) in the West and Arunachal Pradesh in the East. Accordingly, it will activate almost the entire frontage along the LAC. To claim victory, it has to capture some of the few reckonable objectives and prepare its campaign accordingly. Own logistic network has to cater to that condition.
2. Induction of modern military hardware is needed to upgrade own equipment profile. But advanced countries do not share manufacture technology, never fully and that impinges on defence logistics. Therefore, if the appropriate degree of indigenous production of military hardware is necessary, indigenous design and innovation of these has to be mandatory.
3. Ammunitions produced by the Ordnance Factories are available for more or less 10-15 days of 'intense' or '15 (I)', warfare. Higher grades of ammunitions are presently available only at 6-10 (I) level. Brisk efforts are underway to build these up to 15 (I) level in the coming 4-5 years. Eventually the goal is to build-up the stocks to 40(I) level.
4. Ordnance Factories do not have the capacity to meet the requirement; domestic eco-system for manufacture is deficient. Foreign companies are ready to supply basic ammunitions but need assured orders. Import of ammunition is extremely costly; besides, the cutting-edge components are held back by the original manufacturers. Manufacturing complexities further increase as of many of the modern ammunitions require participation from more than one company.
5. Compatibility of scales of demands and production is also a critical consideration.

Ammunition stocks have to be destroyed after expiry of shelf life, and the dead losses are very heavy. Export marketing of defence inventories is the one way out.

6. More road axes are needed to move ammunitions from depots to deployment areas.
7. There is adequate storage for FOL in border areas. But in remote and inhospitable border areas, there are concerns over the time gap between the start of campaign period and the road opening/stocking process to begin.
8. For logistic sufficiency, local and *in-situ* repairs and maintenance capabilities need to be developed, including 3D manufacture of parts.
9. Mix of 'pull' and 'push' models of logistic supply need to be fine-tuned.

Communication Systems

1. Effective Information Warfare (IW) capability would pose a formidable level of deterrence to the adversaries.
2. For effective signal communications, ISR and dissemination of intelligence under operational as well as routine stand-to conditions, communication and data centres are needed to be connected for all end-user formations and units for these to have ready access.

3. Problem lies in non-integration of diverse communication systems adopted by the three services. Steps to integrate these systems through complex and expensive processes are underway, but rather tentatively.

Air Force Logistics

1. Ammunition holdings are less than 10 (I). War Wastage Reserves (WWR) are short by as much as 70 percent. There are substantial inadequacies in holdings of the precision guided munitions (PGM) and glide bombs (ex-import). Production rate of missiles is too low for the needs of contemporary operational usage to be met.
2. Supplies spares for Russian origin military hardware are problematic. That leads to drop in the serviceability states to 65 percent or so as against the minimum target of 75 percent. Maintenance issues are also cropping up with the AN-32 transport aircraft fleet. For counter-helicopter and drone operations, holding of man-portable IGLA missiles is insufficient.
3. We have adequate numbers of well-located air fields to operate astride the border areas.
4. Storage and repair facilities are adequate.
5. Fuel and storages are adequate except at the North-Eastern airbases.

Naval Logistics

1. In future, intense maritime operational engagements should be expected to occur intermittently. Even after the end of operational engagements, forces still have to continue with their deployments over much longer durations.
2. With stock levels of 10/15 (I), ammunition management cannot be endured over long deployment periods. At sea, manpower fatigue would be another issue. These debilities need to be addressed with alacrity, particularly due to their long gestation period.
3. Fuel stocks are adequate.
4. With Navy's reduced numbers of warships (just about 40 odd ships being available at a time for deployment after catering for the processes of turnover, refit etc.), and no mine sweeper left in service, any

two-front operational deployment is unsustainable.

Defence Capability Building

1. Military preparedness is contingent to sustainability from the defence industry.
2. Strategic partners' political and strategic heft must pave the ways for high-technology assistance and enabling operational support.
3. We have to rationalise to decide on the scales of WWR and other reserve stocks. Right sources of supply, both indigenous and foreign, have to be activated.
4. Building up pan-national logistic capability is mandatory to meet national security requirements.

Note: Refer to **Appendix 'C'** attached for a listing of defence logistic developments.

Part IV : Issues of Defence Industry

Observations of the Indian Defence Industry

1. In addition to induction of modern weaponry and equipment, the PLA is also indigenously upgrading its legacy Russian assets. Whereas due to low numbers and component deficiencies - major accessories, ammunition etc. for example – many of the Indian military's in-service systems are not fully functional.
2. Indian military's holdings of its major war assets are way below the Government approved scales. That is also true even in case of urgently needed drones and the UAVs. There is also the additional need to incorporate EMP protection into the own inventory.
3. Routine and usual requirements of the own forces can generally be met from the domestic industry. However, there are certain critical gaps.
4. Industry will be able to respond to the requirements of modern armed forces in quick time. But for that, 'out-of-country' issues like export clearance, cooperation in space and ISR components etc. need to be resolved with alacrity.
5. Quantum computing and AI are the PRC's strengths. Much needs to be done on these fields in India.
6. We need to match the PLA's huge drone capabilities by developing air and underwater drone and anti-drone systems.
7. We need to work on EMP and high-power LASER weaponry.
8. To catch up with contemporary defence technological standards, India's military procurement has to be freed from the self-imposed and self-injurious processes. The single vendor restriction is one example.
9. Defence Ministry's cogency with the Services and the Industry is yet to form-up. This isolation needs to be overcome early.
10. Atmanirbharta and 'L-1' concept need to be mutually responsive.

11. To undertake defence modernisation projects, the private sector needs to be helped with risk-mitigation provisions.
12. Thrust on defence exports may not be allowed to divert defence procurements.
13. Defence exports need to be appropriately leveraged for strategic purposes.

3. Issues of money exchange, payments, banking hurdles etc. need to be resolved sooner so as to take advantage of the gains made or being made. Financing issues with the ASEAN need early resolution. Use of Special Drawing Rights (SDR) could be explored.

Study Group on Defence

Summation of Observations and Recommendations

The discussion set a factual perspective of India's ground and oceanic territorial. The issue is particularly relevant in light of the floating perceptions among the analysts as well as students of national security over the current India-China stand-off.

Salient inferences on management of the *altered situation in the Continental Domain* are summarised as follows:-

- a. China's belligerence will remain more or less a permanent drag on India's progress. After decades of pinning hopes on China softening its arbitrary and falsified territorial claims to reconcile to the geographic and traditional facts, it is time to accept that fact and prepare accordingly.
- b. The CCP has reaffirmed its will not to relent from its self-assumed territorial claims. With gaining political and economic power, it will accelerate China's unilateral ingress and built-up into Indian territory. After a period of quietude, further encroachments – political and military - into Indian territory should be expected.
- c. Humungous power differential limits India from deterring the CCP's aggressive designs. Yet, India, by boosting her defence preparedness, can render it prohibitively costly for China to take to any major military aggression to target India.
- d. While brisk build-up of defence preparedness is underway, fielding of robust ISR capabilities, particularly remote sensing surveillance and communication satellites, is a top priority in thwarting further encroachments across the LAC. To breach the gap between the ISR requirement and indigenous production, it would be prudent to resorted to one-time off-the-shelf bulk import of satellites. Further, indigenous development of ISR technologies (drones,

cameras, data communication etc.) need to be accelerated.

- e. ISR capabilities have to be sustained with robust deployment of forces on ground and air – even space. Forces need to be provisioned with responsive ground and air mobility to react and deploy in quicker time. Additional and upgraded military bases have to be activated to operate the entire systemic chain.
- f. Accelerated acquisition of front-line military aircrafts and long-range weaponry have to be prioritised.
- g. Equal priority would have to be accorded to accelerated build-up of military logistic infrastructure closer to the LAC. Logistic installations within 100 km of the border need to be made resilient against missile strikes.

Inferences on management of hostile naval presence in India's *maritime domain* are summarised as follows:-

- a. China's maritime threat needs to be defined and build-up of own naval capacity time-lined accordingly.
- b. Considerations over national security obliges India to manage the PLAN's growing aspirations of domineering over India's oceanic interests. ISR capability to monitor India's oceanic areas of interest, backed up with adequate capabilities of force deployment, mobility and

base facilities are necessary to meet that obligation.

- c. Besides deployment of higher arrays of satellites, every other option, including open-source information – data from the Indo-Pacific Partnership for Maritime Domain Awareness (IPPMDA), for example - could be tapped for surveillance.
- d. 'Plan-2047' and 'Maritime Vision-2030' articulate various measures to match India's growing maritime responsibilities with her naval capabilities. Presently however, India's oceanic security is limited by inadequacies of the Navy's warship inventory – submarines, mine sweepers and logistic back-up particularly.
- e. Brisk commitment to Indian Navy's modernisation and empowerment notwithstanding, it will take long time for these to be available for deployment against the rising commitments. Measures to accelerate the naval build-up have to be thought of.
- f. Prevalence of procedural hurdles continue to stymie development of defence industry. Defence production as well as acquisition have to be accorded relief from the routine business restrictions stipulations like 'single vendor', L-1 and funding norms. Special provisions for defence projects should be supported with appropriate legislations

Defence policy-makers do acknowledge the China threat. But there is a 'escapist' notion that diplomacy and external balancing could control India's strategic vulnerability. The military hierarchy therefore needs to clearly articulate, in one voice, the strategic priorities of continental and maritime security domains. Only then could a hard-pressed

Government may be expected to make higher commitments to defence preparedness from its finite resources.

Meanwhile, every possible effort be made to harness own existing capabilities in military industry, construction, space technology, information technology etc. to deter China from activating its belligerence.

Appendix 'A'

Membership of the Study Group on Defence

1. Chairman : Dr Arvind Gupta, Director, VIF
2. Gen NC Vij
3. Lt Gen RK Sawhney, VIF
4. Lt Gen Gautam Banerjee, VIF
5. Vice Admiral Satish Soni
6. Prof. Sujeet Dutta, VIF
7. Lt Gen Rakesh Sharma
8. Amb D.B. Venkatesh Varma
9. Vice Admiral A.K. Chawla
10. Air Marshal Rajesh Kumar
11. Dr. Gulshan Rai
12. Admiral A.B. Singh
13. Lt Gen S Dayal
14. Shri Jayadeva Ranade
15. Lt Gen Anil Ahuja
16. Lt Gen Balbir Sandhu
17. Group Captain Naval Jagota
18. Shri Vikas Khitha (Representing the Defence Industry)
19. Ms N. Ranjana (Representing the DRDO)
20. Dr Saroj Bishoyi, VIF

Appendix 'B'

PLA's Growing Military Power: Implications and Counter-measures

Introduction

In recent years, the Chinese People's Liberation Army's (PLA) military capabilities have grown significantly. China has developed a long inventory of war assets, including nuclear, space, cyber, electronic warfare and counter-space capabilities for strengthening PLA's strategic deterrence capabilities. Many of these weapons and equipment have reportedly been inducted and deployed on ground and sea, and are expected to be used in any future Sino-Indian military confrontation on ground, sea and air. In this context, while the members of the Defence Study Group in its inaugural meeting in May 2023 discussed the *Fusion of Operational Strategy and Modern Instruments of War in Sino-India Context*. In the second meeting, the members discussed the security and strategic implications of PLA's growing military capabilities. It dwelt upon the pertinent issues relating to PLA's development of advanced weapon systems and equipment; the situations in which PLA

would induct and deploy these war capabilities across the Line of Actual Control (LAC) and Indian Ocean theatres; Implications of these military induction and deployment; and, possible counter measures that India can take to resolve the resultant asymmetries in its own favour. The discussion mainly focused on these issues and reflected on the key questions such as how much asymmetry India has with China and how does it deal with the growing asymmetry? What are the solutions that it has and what are the advantages it has over China? Which are the areas, where it needs to invest to strengthen its military capabilities to counter PLA's growing military power? Whether India will fight the future war alone or ally with other strategic partners? And, Whether India has a choice to externally balance the Chinese assertive behaviour?

PLA's Military Capabilities

The PLA's military capabilities have significantly increased over the last two decades. So does the power asymmetry

between India and China, with substantial Chinese advantage. With regard to the military budget, as per SIPRI 2023 fact sheet, the US accounts for nearly 40 percent of global military expenditures, with military spending of \$877 billion in 2022 it leads the world. Whereas China accounts for 13 percent of global military spending and ranked second in absolute terms with military spending of \$292 billion. India ranked fourth with military expenditure of about \$82 billion, which is 3.6 percent of global military spending. However, it is important to note that while the military expenditure of all other major countries are going up and down. China's military spending steadily rising up. South Korea is other one, but to a lesser extent. China has spent systematically, predictably over the last 20 years for strengthening its military capabilities. So their mind is very clear. It is not just spending money on defence, but also on absorption. Both are in place so their defence spending going up steadily. The graph goes up and down, when there is no clear plan for defence spending and absorption.

On the air capability side, the Chinese have a large number of bombers or combat aircrafts. Special mission military aircrafts such as airborne early warning and control (AEW&C), the Chinese AWACS, electronic warfare; tankers or aerial refueling such as

H-6U, Y-20U; strategic and tactical transport aircrafts; and combat helicopters. There is a large asymmetry that can be brought into the front. The Chinese have big lead in the Unmanned Aerial Vehicles (UAVs). In the smaller UAVs, practically there is no comparison. In India, industries in the small drone sectors are taking off. In the space sector, the Chinese have more than ten times the satellites that of India. So, there is absolutely no comparison.

So far as the latest technologies are concerned, the Chinese have expanded the air launched ballistic missiles for the PLA. They have developed PL-15 air-to-air missile with a range of 150 to 170 kilometers, the export version of it (PL-15E) which they have delivered to Pakistan. The PL-15E has the capability to attack cruise missiles, unmanned aircraft, manned aircraft and other targets. The J-20, which is designed as an air superiority fighter with precision strike capability, is armed with the PL-15. The PL-21 missile that they developed has capability to reach upto 300 kilometers. They have developed HQ-9 system and HQ 16, a medium-range surface-to-air missile (SAM) system. They have learned from the Ukraine war that HQ-9 could be vulnerable so they have relocated it and developed HQ-11 surface-to-air missile. The Chinese air defence system are well supplemented by a

large number of decoys. This no longer relies on foreign sources. It has shifted to domestic industries for development and production, where independent research has become world class. They also have offensive weapon systems.

The Chinese YJ-21 anti-ship ballistic missile (ASBM), which is a hyper sonic missile, unveiled a couple of years ago. It got a range of 1500 km with a terminal velocity of mac 10. The US administration reported to the Congress that they do not have capability to counter this missile of China. This raises concern because it is expected that the PLA will deploy this hypersonic missile along with others in the sea in the coming years. The DF-21D, an ASBM, which the PLA claimed that it has a range of 3000 km, the earlier version had 1500 km range. It covers Arabian sea, the Bay of Bengal almost halfway to Sri Lanka. This missile with combined satellite surveillance capabilities can possibly target aircraft carrier and destroyers among others. Though it is not that simple for the PLA to target military assets as it will have required updated information for targets. However, this raises concerns because India is lacking ASBM capabilities. Developing such advanced capabilities will take some time. This also require dovetailed defence capabilities on land as well for detecting and destroying the Chinese missiles.

The Chinese also leading in terms of quantity as well as quality of defence equipment. They are increasingly using the newly acquired critical and emerging technologies, such as quantum technology, artificial intelligence, semiconductors to further advance sophistication and precision of the PLA's defence capabilities. They are targeting to have 400 capital ships by 2025. This is in comparison to the Americans, who currently have about 295 to 296 ships. The Chinese are in fact overtaking the Americans in key areas of defence capabilities. Whereas India has about 40 ships.

Lessons from Ukraine War

Though the Ukraine war is a different ball game and it cannot be compared with the Sino-India context, the participants deliberated the nature of war as it has witnessed the first full-fledged drone war, and the impact of asymmetric warfare, especially in the field of intelligence, surveillance and reconnaissance (ISR), cyber and information warfare. At the beginning of the Ukraine war, the Ukrainians used the asymmetry in the UAVs. They used extensively the Bayraktar TB2, a medium-altitude long-endurance (MALE) unmanned combat aerial vehicle (UCAV), which is manufactured by the Turkish drone company.

After sometime, the Russians figured out how to counter the Bayraktar TB2 and they

are now doing better. The Ukrainian also did a lot of cyber at the beginning, which the Russians are now able to counter too. Soldiers carrying the mobile phones have become target in this war. They are targeted kinetically and also for disinformation war and cognitive war purposes. In the ISR sector, the Ukrainians have big advantage, especially supported by the US led western countries. Ocean researchers and analyst provide information to the Ukrainians telling them where exactly the Russian targets are located. So the Ukrainians with almost no navy power are able to inflict heavy damage on the Russian side.

Implications for India

The PLA's rapid military modernisation and potential induction or deployment of its newly acquired weapons and equipment along the LAC and Ocean theaters has serious implications for India's security, which require urgent countermeasures. In case of future India-China war, however, it will not be confined to the bilateral combat as such, but it will become more complex, where other regional and external powers will also get involved in the war. This scenario will also replicate in case of conflict in the Taiwan strait or in the South China Sea. There is also increasing possibility of the PLA using the Pakistani airspace to attack on India's western

sector. Pakistanis will be complicity on this and will allow them to use their airspace.

China sees the US as a number one threat to its security and global ambition. So in future Sino-India conflict, Beijing would perceive India's growing strategic partnership with the US and other Quad member countries as a threat to its security. Whether India accepts or not, China sees India along with the Quad countries. It is calculating India in its global framework of the challenges that it faces both short-term as well as the long-term challenges. Therefore, India needs to be careful, while getting dragged into the great power conflict and deploying its military capabilities in the Malacca strait or sending naval powers to the Taiwan strait.

At the same time, India is currently the weakest link to the American frontline vis-à-vis China. While the US has military alliance with Japan, South Korea, Australia and Philippines, and they are alienated to defend their collective national interests. India is an ambivalent strategic partner. It has longest, but weakest front against China. Importantly, Taiwan has also built a robust military capability to counter China and also getting continued support from the US.

On the maritime domain, while land and air vulnerabilities are traditional, which needs clear attention. India has different types of

maritime problem with the China. It has maritime territorial problem. In contingency situations, the merchant ships in the Indo-Pacific region will get affected as the ships in the Black sea got affected during the ongoing Ukrainian war.

On cyber, space, and combination of cyber & space in the civil and military domain vulnerabilities are yet to be clearly known. For instance, US fights cyber and space related challenges against China and also Russia, but those have not come out clearly yet. How the war will start with China also not known, whether it will be another border conflict, cyber-attacks to cripple India's critical civil and military capabilities, or through space technologies. Here, there is need to define what constitute war in the context of India and China.

Counter-measures

With current defence expenditure and defence R&D plan, India is facing challenges in catching up with the PLA's growing military capabilities. However, it was pointed out that there are four things that can be isolated: training, terrain, tactics and Brahmos, where India can do asymmetry. Combat helicopters will not survive in the emerging nature of battlefield. India needs to target their command and control system. The areas where it needs to invest include

sufficient number of fighters, manpads (short-range, lightweight and portable surface-to-air missiles), infrastructure, mountain radars, VAF radars, low cost AD, anti-UAV, dispersion, and electronic warfare. These are doable technologies that India can develop to build its capability to counter the PLA's growing military capabilities. While building capabilities in big ticket defence platforms. The due importance must be given to strengthen these doable technologies, which would help build asymmetry capabilities vis-à-vis China. In this regard, India needs to refine the processes for both indigenous development and production of defence equipment and also through government-to-government procurement of defence systems and components wherever required. But it should be cautious about the transfer of technology (ToT) and joint development of defence equipment as the real ToT are not happening at the ground level. There should be internal competition among the industry players for indigenous development of advanced defence technologies to meet future needs. In this regard, the technology development, sustainment, absorption and risk management of industry players are very important.

India and other regional countries, especially the Quad have realised that the growing asymmetries in numbers cannot be bridged

by a single country. So there is increasing convergence of security and strategic interest among the likeminded countries to counter the PLA's growing military capabilities. Because as its capabilities growing, the PLA's assertiveness in the region has simultaneously increased. Though the Quad is currently not a military alliance. But, in case of India-China contingency situation, the Quad countries can be expected to provide critical intelligence on China as the US led western countries are currently providing to the Ukrainians. This could be a force multiplier. In this context, India also needs to be very clear about its stance on whether it wants to fight future conflict with China alone or with other major powers. Particularly, the external balancing is a dangerous thing, where it should be careful.

Importantly, building a robust maritime force is critical, because a large maritime front can deter the PLA in conflict situations. So India needs to further strengthen its own maritime forces and capabilities. In this regard, India's conventional and newly acquired submarines, its strategic locations in the Andaman and Nicobar Island, and in the Indian Ocean Region (IOR), including in the Malacca Strait could play critical role in countering the Chinese naval power in the future. So the concentration of firepower will prove critical in case of Sino-India conflict and the

Indian navy will not be just walkover in this situation. It has ability to inflict unacceptable damage to the enemy. Moreover, India further needs to increase its ability to detect underwater, where partnership with Quad countries can be developed for enhancing shared capabilities. The ISR capabilities are also key in the maritime domains. The 24x7 surveillance of the sea as well as the land is important, where the high endurance military drones will play critical role.

India will find very difficult to build military parity with China, given the huge economic and technology gap that has developed over the years. It was noted that asymmetry is important. But at the same time, it is equally important to identify the vulnerabilities vis-à-vis China. What are the Chinese vulnerabilities? Those need to be identified as well because fighting the Chinese weaknesses will be very effective. India needs to be realistic about the asymmetries, and it will sometime have to fight with these asymmetries. In a conflict scenario, there may be setbacks from India's side, but it must keep fighting. The ability to fight and fight hard is the key. Loss of certain land areas, military assets or people will not be a loss of war. Importantly, the other sides casualties, loss of weapons, and vulnerabilities must also be estimated.

It was suggested that India can emulate the American strategy by developing a National

Security Strategy (NSS) that followed by National Defence Strategy (NDS), then individual strategies for army, navy and air force, which should flow from the overarching National Security Strategy. Such national security structure requires to be developed with wherever changes needed to fit into India's national goals. This will take into account the threats and challenges that India

faces, and what it needs to do to build its capabilities to address those challenges. It was emphasised that clear political direction and resource allocation for defence procurement and indigenous development & production are also very significant in achieving defence and strategic objectives. The political will and military capability together send a strong message to the enemy.

Appendix 'C'

Notes: Discussion on Logistics and Military Preparedness

Strategic Infrastructure Development

CSG Approval, 2005

- a. LTPP-1: 73 Strategic Roads (-30 km from border) and 14 Rail Links to be constructed by 2012 (19+4 actually built).
- b. LTPP-2: Connection to the border passes and construction of lateral roads by 2022.

Plan and Progress: 2022

1. 75 Infrastructure Projects in 7 States & 2 UTs (18 in AP, 14 in Sikkim 5 in UK, 18 in Ladakh, besides WB, HP, Punjab, Rajasthan. Includes AP – 64 Roads (3098 km); Sikkim - 18 Roads (664 km); UK – 22 Roads (948 km); Ladakh – 43 Roads ((3141 km).
2. Completion of 27 Roads, 45 Bridges, 2 helipads, 1 Habitat. Upgrade of roads to Zero, Menchuka, Tuting, Anini, Kibithu is underway. Alternate routes to Tawang, North Sikkim are under construction.
3. DBO Road 174 km (364 km 2xLeh) under

construction. Construction of another road across Saser La may be revived. 1554 km Trans AP Highway Tawang-Tirap is under preliminary planning.

4. Upgrade of ALGs at Tawang, Zero, Along, Menchuka, Tuting, Vijaynagar, Walong, Pasighat, DBO, Fukche, Nyoma and Air Fields at Chauba, Tezpur. 14 out of 100+ DZs are active.
5. All roads are being constructed to NHDL/ Class 9+ specifications (suitable for move of SMERCH, Pinaka, Brahmos).
6. Advantages accruing out of Brahmaputra Bridge; maintenance of NH 52 & 37; under construction Guwahati-Itanagar Highway, BADP (10 km border belt) in 117 Districts of 16 States and two UTs.

Current State of Logistic Developments

1. 90 infrastructure projects in 10 border States and Union Territories (UTs) of the northern and North-Eastern regions are nearing completion. These include 22 roads, 63 bridges, the Nechipu Tunnel

- in Arunachal Pradesh, two airfields in West Bengal and two helipads.
2. Overall, there are 36 projects in Arunachal Pradesh, 25 in Ladakh, 11 in Jammu and Kashmir, five in Mizoram, three in Himachal Pradesh, two each in Sikkim, Uttarakhand and West Bengal, and one each in Nagaland, Rajasthan and Andaman and Nicobar Islands.
 3. Scheme of developing Vibrant Border Villages under the Border Area Development Plan is under consideration.
- b. A substantial degree of systemic strain has to be continued to be borne in achieving the required level of logistic stamina. The strain would manifest in limiting operational options and flexibility, usage of degraded ammunition, limitations of transportation and high manpower attrition due to grueling fighting and survivability conditions.
 - c. It would require sustained work out put and funding over a decade or more to develop a level of *logistic stamina that would deter aggression*.

Inferences

- a. Logistic infrastructure is capable of sustaining the present level of operational deployments and some more. It can support conduct of localised skirmish actions as well.

About the VIVEKANANDA INTERNATIONAL FOUNDATION

The Vivekananda International Foundation is an independent non-partisan institution that conducts research and analysis on domestic and international issues, and offers a platform for dialogue and conflict resolution. Some of India's leading practitioners from the fields of security, military, diplomacy, government, academia and media fields have come together to generate ideas and stimulate action on national security issues.

The defining feature of VIF lies in its provision of core institutional support which enables the organization to be flexible in its approach and proactive in changing circumstances, with a long-term focus on India's strategic, developmental and civilisational interests. The VIF aims to channelize fresh insights and decades of experience harnessed from its faculty into fostering actionable ideas for the nation's stakeholders.

Since its establishment, VIF has successfully embarked on quality research and scholarship in an effort to highlight issues in governance and strengthen national security. This is being actualized through numerous activities like seminars, round tables, interactive-dialogues, Vimarsh (public discourse), conferences and briefings. The publications of the VIF form the lasting deliverables of the organisation's aspiration to impact on the prevailing discourse on issues concerning India's national interest.



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