

CRITICAL INFRASTRUCTURE AND RESPONSIVE JOINT LOGISTICS A ROADMAP

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Abstract

A well-structured Joint Logistics Doctrine, leveraging varied logistics imperatives; and military infrastructure inclusive of the physical and organisational domains, are necessary for optimum application of combat power. With the understanding that our existing defence logistics systems leave adequate scope for improvement, there is an inescapable need for making an expeditious transition to a robust and comprehensive joint logistics architecture. This would need to be reinforced through resolute physical military infrastructure and capability building, dovetailed into the national infrastructure to address all criticalities, both existing and emergent. An appropriate and time-bound roadmap towards a responsive joint logistics framework is hence mandated as a key operational imperative to empower the Indian Armed Forces to be future-ready.

Critical Infrastructure and Responsive Joint Logistics a Roadmap

“Focus on critical infrastructure building through an integrated approach, right from a number of strategic tunnels and bridges to green expressways, is bound to place India in the league of advanced nations like the US, UK and Australia in the coming two years.”¹

Introduction

Recent path-breaking defence reforms entailing creation of Chief of Defence Staff (CDS), subsequent setting up of the Department of Military Affairs (DMA) and proposed creation of Joint Theatre Commands, have sent a strong signal of intent to the world at large and our adversaries in specific. A reappraisal of existing defence structures, systems, processes, is hence mandated in an expeditious manner. Resource mobilisation to achieve desired preparedness levels in a cost-effective and time-bound manner too is the need of the hour.

Evidently future battlefield milieu will see the employment of multi-domain operations perpetrated through new-age disruptive technologies, in short, intensive operations against a CBRN backdrop. The successful prosecution of operations demands jointness in concept, doctrine, organisation and execution. This would lead to optimal integration of resources and leveraging of innovative technologies, concepts, information networks, transportation and logistics systems.² The rapid strides by US, UK, Russia and recently China, in implementation of effective joint structures underscores the expediency required for adoption of same in our forces as well.

Military Logistics-Operations Dynamic

Unlike civilian interpretation of the term “logistics”, “military logistics” has a much wider scope. A widely prevalent definition describes it as “discipline of planning and carrying out the movement and maintenance of military forces.”³ However, a more comprehensive way to define it would be as encompassing, “design, development, acquisition, maintenance, modification, upgrade, storage, distribution and disposal.”⁴ Military logistics has historically yielded battlefield victories for nations possessing sound and superior logistics. Examples are numerous.

Infrastructure, both civil and military, is clearly the bedrock on which edifice of a nation’s Comprehensive National Power (CNP) is built.⁵ Requisite military infrastructure facilitates optimum application of

combat power. Critical national civil infrastructure includes a robust road and railway network, airports/ airfields, ports, inland waterways, power, energy and transport infrastructure and more. In military parlance, critical infrastructure comprises of two domains; physical and organisational, wherein the former pertains to fixed structures necessary for war-waging capability and the later comprises of organisational systems and structures required for smooth conduct of military operations.⁶

Logistics Organisational Voids

Lack of integration in logistic processes of three Services, an over reliance on a defence logistics ecosystem built around a thriving culture of committees, absence of single point logistic advisor to Service Chiefs and CDS, and nearly 70% dependence on arms imports are glaring shortcomings which need urgent address. The cabinet approval for corporatisation of 41 Ordnance Factories,⁷ promulgation of Defence Acquisition Procedure (DAP) in Aug 2020, and focus on indigenisation in defence needs through “Atmanirbhar Bharat” project (entailing release of two negative import lists covering 209 items⁸ by MoD in Aug 2020 and May 2021), are welcome first-steps. However, grey areas remain like the need to evolve joint war fighting concepts, inadequate integration and weak existing logistics structures at HQ Integrated Defence Staff (IDS).

While some measures like the setting up of Joint Logistics Nodes (JLNs) at Mumbai, Guwahati and Port Blair, have materialised, logistics reforms at the apex level are urgently needed. These voids include lack of empowering presence in the National Logistic Council (NLC) at government level and a Defence Logistics Agency (DLA) at MoD level (like in the US). Absence of a fully networked and integrated logistic grid with real-time inventory visibility, standardisation of inventory amongst three services, adoption of life cycle costs concept etc merit attention of key functionaries and decision makers at all levels. Integration must commence top down as also bottom up simultaneously. To integrate the organization and procedures of the military services a National Security Act should be promulgated on the lines of Hoover Commission precedent of the US Govt.⁹

Organisationally the common features of sustainment viz subsistence, habitat, and all forms of troop support (even communication structures) lend themselves to jointness and can be easily built on common foundational planks for all military. As jointness evolves integration must concurrently happen within the Army. Army is singled out here is because 'on land' subsistence structures predominantly belong to and are operated by the Army, and logistical functions in other two services are executed right till apex levels by mainstream logistics cadre and not generalist oversight. Nonexistence of a uniform logistics cadre in the Army is a major void.

Physical Military Infrastructure & Voids

Physical infrastructure along international border (IB) and line of control (LC), is relatively developed and affords reasonable flexibility, however our infrastructure along Line of Actual Control (LAC) is dismal. In contrast, Chinese communication infrastructure build up in Tibet Autonomous Region (TAR) and Xinjiang Uighur Autonomous Region (XUAR), provides the adversary nearly two decades head start.¹⁰ Notwithstanding belated approval for additional 104 roads 6700 km in length, under India China Border Roads (ICBR) Phase-II in year 2020 construction of 73 strategic roads 3323 km in length, approved in year 1999, under ICBR Phase-I languishes, even after 22 years.¹¹ Though completion of key projects such as Leh-Darbuk-Shyok-DBO road in Ladakh, Ghatibagarh-Lipulekh road in Uttarakhand, Damping-Yangtze road in Arunachal Pradesh, Atal Tunnel astride Manali-Sarchu-Leh axis, Bogibeel and Sadiya bridges on River Brahmaputra, and activation of forward Air Landing Grounds (ALGs) at DBO, Fukche, Nyoma, Ziro, Along, Mechuka, Pasighat, Walong, Vijaynagar¹² in Arunachal Pradesh, stand out as significant efforts, a lot remains to be done. Inland waterways with ample scope in the NE,¹³ remain neglected.

Assured all-weather connectivity to Ladakh through Zojila and Rohtang axes is a major operational requirement of Indian Army. Therefore, strategic tunnels beneath Zojila Pass and Baralacha Pass,

Lachulungla Pass and Taglangla Pass astride Manali – Leh axis, assume importance for speedy implementation. Further, tunnel under Sela Pass, three major road projects viz 1800 Km Arunachal Frontier Highway (connecting Kameng Sector and RALP along LAC alignment), Trans-Arunachal Highway and East West Corridor¹⁴ are key to reducing infrastructure differential with China. Also, since our existing communications in Central Sector and Eastern Sector prevent side-stepping of forces due to lack of laterals, it increases complexities for establishing Theatre-level logistics hubs like China has achieved at Naqu, Xining and Shigatse. Cross sector connectivity will optimise logistics costs through faster completion of projects to achieve year-round axial as well as lateral connectivity.¹⁵ Recent experiences in Eastern Ladakh have demonstrated the need for construction of hardened underground ammunition/ FOL storage sheds, missile silos; blast pens for aircraft and long range vectors; fortified command and control centres, permanent defences and living shelters for troops at forward areas. Number of hydel projects have maintenance tunnels which can be used for storage of critical assets including ammunition but these arrangements need to be incorporated at the inception stage itself.

NLC Challenges & Recommendations

The NLC and crafting of a National Logistic Grid is aimed at addressing weaknesses of a system devoid of centralised planning and coordination. Nascent recent steps taken through designation of Division of Logistics, under Ministry of Commerce, as the nodal agency to coordinate issue of “National Logistics Policy (NLP),”¹⁶ may not address defence needs, despite incorporation belatedly of defence recommendations, due to its basic premise to reduce logistics costs from 14 percent to less than 10 percent by year 2022.¹⁷ NLP, only through integration of national and military logistics, is likely to address military requirements of faster mobilisation, improved ports, shipping and transport infrastructure, warehousing, shift to electric vehicles and clean fuels etc. While ministry of Commerce needs to take ownership for providing cholesterol free national arteries that facilitate conduct of commerce most cost effectively,

NLC must have robust representation from Ministry of Defence, Finance, Home, Road Transport and Highways, Railways, Civil Aviation, Shipping, Power, Petroleum and Natural Gas, IT and Communication, Water Resources, and NITI Aayog. The MoD component should have the mandate to evolve and formulate long and short term logistics and infrastructure development plans. It should be dovetailed with Integrated Capability Development Plan (ICDP) and Defence Capital Acquisition Plan (DCAP)¹⁸.

HQ IDS : Major Structural Foundation

DACIDS (OL) at IDS reports to DCIDS (Operations) through ACIDS (Joint Operations). There is a need to create a separate logistics vertical at HQ IDS, headed by a new appointment of DCIDS (Logistics) with three other ACIDS (Logistics) under him to coordinate varied logistic functions. This will lend due weight and proactive thrust to overall jointness and integration efforts. Specific mandate of DCIDS (Logistics) is envisaged as overall ownership of joint logistics ecosystem, besides, formulation of tri-services logistic policies, identification of common use equipment, stores and their procurement, coordinate logistics training, exercise oversight and coordinate functioning of Joint Logistic Nodes (JLNs), Joint Logistic Depots (JLDs) and Workshops (JLWs), and recommending inter-se procurement priority amongst three Services. As our joint organisations and structures evolve, HQ IDS with requisite staffing and cross service pollination is likely to possess the capacity to provide structural foundations for raising a tri-services functional Joint Logistics Command headed by a three star officer holding the appointment of Chief of Joint Logistics by year 2032-33.

Integration Paradigms

Integration of tri-services logistics also involves provision of common IT enabled platforms, NFS enabled communication network, standardisation of sizeable inventory of each service, and test bedding and further expansion of identified JLNs. Intra-service integration of

inventory management systems, based on SAP ERP system and existing successful adoption of CIGG of Army Ordnance Corps, is essential to achieve early and smooth integration. Early adaptation of existing systems of all three services and their branches through “Business Process Re-engineering” will achieve a common platform, with adequate communication, and smooth data management. Timely completion of ongoing two year test bedding of JLN at Mumbai, Guwahati and Port Blair scheduled from Oct 2020/ Apr 2021 and additional 15 JLN during next phase shall be critical to fast track the integration process.¹⁹

Plain Look at the DLA Model

Creation of DLA, to function as a Combat Logistics Support Agency under MoD, is necessary to support jointness.²⁰ Proposed mandate of DLA entails joint procurement and contracting; management of defence supply chains, integrated equipment management, maintenance, repair systems, transportation; and facilitation of augmentation of dual-use infrastructure and technology infusion in defence logistic structures. Here, an objective analysis of functioning of US DLA (raised 1961) and its mandate will be prudent to draw correct lessons in so far as its adoption in our context is concerned. Being an expeditionary force with evolved joint logistic structures since late 1980s, US military has functional commands such as Transportation Command and plethora of defence agencies such as DLA, DARPA, Defence Contract Management Agency (DCMA), Defence Contract Audit Agency (DCAA) and others to support US forces. DLA has 26,000 employees and manages the global supply chain for US Army, Navy, Air Force, Marine Corps, Space Force, Coast Guard, 11 Combatant Commands, other federal agencies, and even allied nations. Its mandate involves six main functions to include Aviation Support, Distribution Services, Disposition Services, Energy Services, Land and Maritime Support and Troop Support.²¹ In effect, its acquisition programme covers procurement of 5.2 million items with nearly \$34 Billion annual sales, wherein it buys stores and distributes food, fuel, clothing, pharmaceuticals, medical products, weapon and system repair parts for military and other customers worldwide. US DCMA, established in year

2000, further supplements the DLA functioning by undertaking entire contractual activities for US DoD. Keeping in view our nascent steps to achieve jointness and integration of defence logistics, a more nuanced and pragmatic approach would yield spinoffs with minimal disruptions. Hence, a gradual evolution of joint logistic structures with DLA functioning as a combat logistic support agency and undertaking entire procurement and contracting functions, besides specialist functions at single service level is worth examining.

Logistics Paradigms & Concept of Operational Logistics

Defence forces across the globe are constrained for resources and their optimal use. In such quest various modern logistic concepts such as Distribution Based Logistics (DBL), Third and Fourth Party Logistics, Performance Based Logistics (PBL) and Smart Logistics with their pros and cons are in vogue in both military and civil domains, it is the “Focused Logistics” concept which has found broader acceptance amongst professional military logisticians for formulation of Joint Logistics Doctrine for Indian Armed Forces. Professional military logisticians define it “as the fusion of information, logistics and transportation technology to provide rapid crisis response, to track and shift assets and to deliver tailored logistics package and sustainment at the strategic, operational and tactical level of operations”²². It aims at building a joint logistic system based on speed instead of mass through reliance on faster transportation of stores to achieve a balance between “just in case” and “just in time” logistic philosophies.

Operational Logistics, the term itself seems to sow confusion, as logistics is operational right from the drawing board stage or even before operations can be envisaged. Logistics and ‘Operational Logistics’ can never have any boundaries defined as it is one seamless organism. Perceived necessity invented this coinage for want of a coordinating body (which loses relevance totally as joint structures and a uniform logistics cadre is a growing reality), however in practice this emerged as a tool of oversight with apex at Command and above levels manned

by officers drawn from non-logistics streams, essentially as an oversight with neither responsibility nor accountability, thereby only leading to increased overheads, no value addition and trust erosion, and consequently the logistician lost his advisory mandate.

Thus time has come to forget this OL concept and revert to Logistics and usher in a Joint Logistic Doctrine based on 'Focused Logistics' which leverages civil military fusion, integration of national infrastructure, theatre based development of joint logistics infrastructure, suitably supplemented by new age, emerging AI driven disruptive technologies such as Blockchain, Robotics, Internet of Things and more.

Logistics Structure at Joint Theatre Commands

Logistic structures at Joint Theatre Commands may have leaner orientation at the top built upon the existing logistic set up at geographical commands of three Services. Logistics chain of each service will continue to function under their respective component commander with staff oversight, monitoring and coordination functions with IDS (Logistics Branch) being exercised by Logistics branch at Joint Theatre Command. At the functional level, besides, coordination actions by HQ IDS, requisite command and control over JLN, JLD and JLW, till such time Joint Logistics Command is raised, should remain with service headquarters of the designated lead service for respective tailor made entities. For distribution of logistic processes, core competencies and domain expertise of each Service in diverse logistic fields covering ammunition, rations, fuel, oil and lubricants, movement and transport, clothing and general stores, engineering support for small arms, UAVs, aviation and specialist equipment etc should be the singular criteria for finalising responsibilities amongst three Services. Augmentation of joint logistics training under overall joint Professional Military Education (PME) framework is another key focus area. Existing capacities of tri services training institutes as well as service specific logistic training establishments, therefore, must be leveraged to train both officers and JCOs/WOs/NCOs with terminal objective of producing specialists

capable of handling all facets of a particular logistic field. Optimisation of resources, disruption in existing entities, downsizing, ushering in of embedded civilian entities are inevitable. However change management should be graduated to smoothen turbulence.

Summary of Recommendations

- **Infrastructure Voids.** Renewed push to fast track ICBR and related strategic infrastructure projects through enabling legislation, increased financial allocations, administrative urgency and tactful engagement of state governments and tribal communities to implement revised roadmap envisaging completion of delayed projects by year 2030. Ongoing construction of \$ 48 bn, 1,011 Km new railway line to connect Chengdu in Sichuan province to Nyingchi, close to Tibet's border with Arunachal Pradesh etc, should act as a catalyst to ramp up our infrastructure along LAC.²³
- **Joint Logistics Doctrine.** A responsive joint logistics framework to meet operational imperatives of highly intense, short duration future conflicts is a necessity. From this should flow the organisational structure.
- **Iterations and Studies.** Numerous iterations and deliberations amongst various stakeholders have facilitated crystallising of the broader architecture and ecosystem under which these structures will evolve, detailed analysis of relevant processes adopted by major military powers to achieve jointness over last three decades would be fruitful.
- **Emergence of Logistics Cadre.** Integration within the logistics cadres of respective Services is a prerequisite for achieving jointness at Apex. It will provide clarity on career progression and clear direction on all processes, skills development and manning of billets. In the Army various logistics related streams could be grouped into three viz

Quartermaster, Transportation and Ordnance verticals based on functionality. Officers from these streams after 4-5 years of service, on qualification could become part of the Logistics Corps. Further progression and manning of jointmanship billets or Logistics Branch at various levels will be contingent to qualification attained. Officers not qualifying for manning logistics corps/ jointmanship billets will continue to handle assignments related to parent vertical. Likewise integration be commenced in Air Force and the Navy too. Such integration must commence in earnest by December 2021.

- **Near Term Objectives.** For implementing joint logistic plans, planning process, with year 2022-23 as base year, should have three phases; near term, medium term and long term covering two years, six years and ten years gestation period respectively. In the near term, creation of DCIDS (Logistics) at HQ IDS and requisite support staff shall be the first step. Timely test bedding of three JLN and a JLD/ JLW each and drawing right lessons along with finalising the framework for integrated networked inventory management system, common communication network, codification of minimum 40% inventory of all three services, joint logistics training and centralised procurement of identified common inventory items by lead service should also fructify in the near term by year 2024-25.
- **Medium Term Objectives.** In medium term, which is likely to witness creation of Joint Theatre Commands, Logistics branch at theatre commands with wider representation of service components and a leaner HQ should be established along with augmentation of HQ IDS (Logistics) branch. Provision of physical infrastructure of automated logistic network riding on NFS; conclusion of common contracts for identified common usage items by designated lead service; commencement of joint training at nominated training

establishments and codification of balance inventory of all three Services shall be achieved by year 2028-29. This will manifest in laying the foundations for bringing up a DLA like structure under the CDS.

- **Long Term Objectives.** A fully vibrant and functional joint logistic ecosystem capable of delivering in operations. It should manifest in creation of a Joint Logistics Command, based on augmented architecture of HQ IDS (Logistics Branch) and establishing of balance pan Indian JLN and JLDs/ JWs as per approved framework. More significantly, creation of a DLA to execute wider procurement and support logistic tasks should be the major deliverable by year 2032-33.

Conclusion

Defence logistics per se is a critical domain, over which patch-work reforms may not generate the desired outcome. The infrastructural gaps in evolving and adopting joint logistics ecosystem pose formidable challenges. Logistics cadres integration within the services and evolution of a logistics corps to man jointmanship billets, as per service specific needs must commence earliest. Logistics should be provided specialist contours and not trivialised with generalisation, for it makes war winning happen. Adroit change management through meaningful iterations and in-depth deliberations between services domain experts and defence think-tanks, is called for. Innovation infusion including AI and quantum technologies will serve the cause of having a modern future-ready logistics support system. Need for concurrent augmentation of physical military infrastructure towards capability development is of paramount importance. Judicious and time bound implementation of proposed road map to achieve a responsive joint logistics framework, under evolving joint war fighting approach is, therefore, a key operational imperative to prepare future ready Indian Armed Forces to counter myriad national security threats.

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Endnotes

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- 5 Also see Comprehensive National Logistics Power, Logistics Paper No 1 published by ASC Centre and College (2017).
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