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China's Military Modernisation: Recent Trends

KARTIK BOMMAKANTI
ANANT SINGH MANN

ABSTRACT Since the assumption of Xi Jinping to the post of General Secretary of the Communist Party of China (CPC) in 2013, the People's Liberation Army (PLA) has undergone numerous changes, both in its modernisation and organisation, that are meant to ensure that the PLA forces will be battle-ready. The modernisation aims for the PLA to acquire the latest technology and logistics for quick and decisive victories in any theatre of battle. This brief examines these institutional changes in China's military, which have also resulted in the PLA firmly coming under the control of the CPC, ensuring that the loyalty of the PLA is always kept under check. The brief updates an earlier version published by ORF in 2019.[1]

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INTRODUCTION

China's People's Liberation Army (PLA) has undergone dramatic changes since the first push for modernisation in the 1980s and 1990s. The modernisation involved constant updates of doctrine, while ensuring that the equipment and organisational structure were improved to better reflect the changing demands of warfare. Doctrinally, the PLA has moved away from the ideal espoused by the republic's founding father, Mao Zedong, of a major conflict with the Soviet Union to one where the military would be more heavily involved in localised conflicts.[2] As the former Chinese Defence Minister Zhang Aiping observed in 1983: "The principle of war is to achieve the greatest victory at the smallest cost. To achieve this we should depend not only on political factors, but also on the correct strategy and tactics of the war's commander, the sophisticated nature of our military equipment, the quality of our personnel who use the equipment etcetera."[3] Indeed, the implementation of this strategy is being seen in the current stand-off between Indian and Chinese forces in Ladakh and Sikkim along the Line of Actual Control (LAC).

Learning the lessons from their war against Vietnam in early 1979, the PLA took serious steps in its reorganisation.[4] Recognising the decreasing likelihood of a total war,[5] the Central Military Commission (CMC) under Deng Xiaoping instituted major changes between 1985 and 1995 in doctrine, organisation and equipment, while keeping in mind local yet intensive wars.[6] Some of these changes included greater emphasis on joint operations, production of indigenous equipment, and converting the overall PLA into a leaner and more efficient fighting force,

Table 1: PLA Personnel, 1980-2020 (in million)

Year	1980	1985	1990	1995	2000	2005	2010	2015	2020
PLA Army	3.6	3.16	2.3	2.2	1.7	1.6	1.6	1.6	2.035[a]
PLA Navy	0.63	0.35	0.26	0.26	0.22	0.255	0.255	0.235	
PLA Air Force	0.4	0.49	0.47	0.47	0.42	0.4	0.33	0.398	
Strat Forces/Coast Guard	0	0	0.09	0.09	0.1	0.1	0.1	0.1	
Reserves	0	5	4	1.2	0.55	0.8	0.51	0.51	0.51
Paramilitary	7	4.3	12	1.2	1.1	1.5	0.66	0.66	0.66
Total number of PLA Personnel	11.63	13.3	16.32	5.42	4.49	4.665	3.455	3.503	3.205

Source: International Institute for Strategic Studies (IISS) *Military Balance*, 1985-2015 in Cordesman, A.H., Colley, S., "Chinese Strategy and Military Modernization in 2015: A Comparative Analysis" in *Centre for Strategic and International Studies*, Washington, D.C., 2015, p. 167.[7]; IISS *The Military Balance*, 2020, vol. 120, (1), 2020, p. 530.[8]

a Combined Active Armed Forces

reducing its total personnel from 13.3 million in 1985 to 5.4 million in 1995 (See Table 1).

The Gulf War of 1990-1991 further changed Chinese perceptions on the nature of warfare. Seeing the decentralised command structure of the US military, combined with the extensive use of technologies such as the Global Positioning System (GPS),[9] the PLA instituted further changes in its command structure to ensure that it was a technologically adept military, capable of merging existing technologies with new ones to keep itself on top of an ever-evolving battlefield. This has led to many changes in the application of technology within the PLA, resulting in an overall improvement in their joint operational capacity, along with providing the latest equipment to the ground troops.

The four core areas of capability development and deployment are the PLA's land, air, naval, and nuclear-cum-ballistic missile forces. The phases of modernisation were first doctrinal, then organisational—the PLA was entirely restructured in the late 1980s, and then made equipment acquisitions beginning in the early 1990s alongside the transformation of the entire force. Since the early 1990s, the PLA's force planners and strategists have recognised the importance of developing and deploying capabilities for theatre-level military contingencies. Indeed, its capabilities are potent today largely because they are geared to managing potential conflicts around the Chinese periphery, such as a cross-straits one with Taiwan[10] and along the Sino-Indian border. However, China is yet to develop the kind of unlimited force projection capabilities that the US possesses, at least in the medium term.

Underlying China's enhancement of its military capabilities is the massive growth of its economy since the beginning of the 21st century. China's military expenditure over the last decade has stayed at around 1.9 percent of its gross domestic product (GDP) and has seen a gradual decrease in its share of government expenditure, from 7.6 percent in 2010 to 5.4 percent in 2019 (See Table 2). These figures appear to indicate that the growth in China's military capabilities has remained in healthy proportion to its GDP (See Table 3). However, there is a lack of transparency in Chinese defence budgets and expenditure; in absolute terms, China's expenditure on defence has seen a meteoric rise over the last decade (See Table 3).

Table 2: China's Defence Budget as Share of GDP and Govt. Expenditure

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Share of GDP	1.9%	1.8%	1.8%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Share of Govt. Expenditure	7.6%	6.8%	6.6%	6.5%	6.6%	6.1%	6.0%	5.9%	5.6%	5.4%

Source: *Stockholm International Peace Research Institute (SIPRI)* Military Expenditure Data Base, *"Data for All Countries 1949-2019", Stockholm.*[11]

Table 3: China's Defence Budget (2010-2020)

Year	Official Chinese Announcements (Nominal USD)	IISS (Current USD)	SIPRI (Current USD)	Growth in Chinese GDP
2010	76.53 billion	136.3 billion	115.77 billion	10.6%
2011	90.25 billion	142.9 billion	137.97 billion	9.5%
2012	103.06 billion	146.2 billion	157.39 billion	7.9%
2013	116.28 billion	161.4 billion	179.88 billion	7.8%
2014	131.12 billion	180.7 billion	200.77 billion	7.3%
2015	142.39 billion	192.7 billion	214.47 billion	6.9%
2016	143.68 billion	197.2 billion	216.40 billion	6.8%
2017	151.49 billion	208.6 billion	228.47 billion	6.9%
2018	167.37 billion	223.6 billion	253.49 billion	6.7%
2019	177.52 billion	-	261.08 billion	6.1%
2020	178.61 billion	-	-	1.2%

Sources: China Power Team, "What does China really spend on its military?" *China Power Project: Center for Strategic and International Studies*, Washington;[12] 2010-2017 accessed from International Institute for Strategic Studies *Military Balance* in Lucie Béraud-Sudreau, "China's 2019 Defence White Paper: the Long Road to Transparency in Defence Spending", *IISS: Military Balance Blog* Stockholm, August 2019;[13] 2018 (without including new items) accessed from M. Nouwens and L. Béraud-Sudreau, "Assessing Chinese Defence Spending: Proposals for New Methodologies", in *International Institute for Strategic Studies (IISS)*, Stockholm, 31 March, 2020;[14] Stockholm International Peace Research Institute (SIPRI) *Military Expenditure Data Base*, "Data for All Countries 1949-2019", Stockholm;[15] "Country Data: People's Republic of China", *International Monetary Fund*, Washington, 2020.[16]

According to official Chinese announcements, the total expenditure in absolute terms has increased monumentally from US$76.53 billion in 2010 to US$178.61 billion in 2020, although institutions like the International Institute for Strategic Studies (IISS) and the Stockholm International Peace Research Institution (SIPRI) have maintained significantly higher estimates of Chinese military expenditure (See Table 3). What is certain is that in 2020, China's military expenditure will see a substantial increase in its share of GDP and total government expenditure, with the Chinese GDP projected to grow at a meagre 1.2 percent by the International Monetary Fund.

THE PEOPLE'S LIBERATION ARMY

The 1979 Chinese military campaign against Vietnam exposed critical weaknesses in the domains of command, logistics and

communications.[17] The denial and the absence of close air support for the Chinese land offensives against Vietnam forced the PLA to rely more on artillery fire support as a substitute and laid bare a crucial gap in the PLA's effective prosecution joint operations.[18] Taking lessons from this military failure, the CMC under Deng Xiaoping instituted far-reaching reforms that resulted in changes in the operational and organisational structures along with the provision of the latest equipment to the PLA.

First, the operational structure of the PLA was changed and the Chinese defence ministry was reorganised. The seven military regions in China were reorganised into five theatre commands: North, South, East, West and Central Theatre Command.[19] With this reorganisation in theatre commands also came that of the forces at the division level; the division-sized forces gave way to brigades with combined arms capabilities, with each brigade being assigned artillery units along with air defence, combat support and infantry units.[20] To ensure that there are no problems in supporting this change in organisation on the ground, the PLA has also made improvements to the teeth-to-tail ratio (TTR).[21] Within this TTR, the PLA has undergone extensive modernisation in it support and logistics capabilities, using the latest technologies such as drones and unmanned aerial vehicles (UAVs) in its efforts to quickly provide critical air support. Established in September 2016, the People's Liberation Army Joint Logistics Support Force (PLAJLSF) provides logistics support by supplying equipment and material, and mobilising manpower, including reserves, in wartime.[22] The PLAJLSF also uses the civilian transportation system to keep all five theatre commands well supplied and replenished for the conduct of joint operations.[23] In a quest to increase efficiency, the PLAJLSF is exploiting the combined use of civilian and military resources.[24]

The PLA, in keeping with the need for more indigenous material, has ensured its army is given the best equipment, including service pistols and tanks. This has resulted in the production of indigenous weapons[25] such as the QBZ-95-1 and the QBZ-95B-1 5.8mm carbine assault rifle, along with the Type 05 Suppressed Submachine Gun. Also in service in the PLA's armoured corps are two tanks, ZTZ-99A and ZTZ-96A, with the latter being an upgraded second-generation tank. Another important addition to the PLA is the ZBD-04,[26] the latest in the PLA infantry fighting vehicle range which provides the PLA with the capability to operate both as an independent vehicle and with other tanks in the PLA arsenal.

Apart from this, in 2018, the PLA unveiled a new generation of lightweight battle tanks, the Type-15, which has been specifically created for deployment in high altitude regions like the Tibetan plateau under the drive for "informationalised equipment system".[27] Reports suggest that the Type-15 tank along with the new 155-MM vehicle-mounted howitzer were deployed for the first time in the PLA's high altitude military exercise held in Tibet in early January 2020.[28] However, in the ongoing Sino-Indian border

standoff, which began in early May 2020,[b] there is a confirmed presence of the new Type-15 tanks on the Tibetan Plateau as part of the 75th Group Army of the People's Liberation Army Army (PLAA).[29] Nevertheless, the Chinese state-run *Global Times*, while alluding to the ongoing standoff, alleged that the new Type-15 tank along with the Z-20 helicopter and GJ-2 drone "should give China the advantage in high-altitude conflicts should they arise".[30] The Western Theatre Command, tasked with military operations against India along LAC, deployed weapons such as the PCL 181 laser guided vehicle mounted howitzers, the Z-20 medium utility rotary wing aircraft and GJ-2 attack drones adapted to the harsh conditions of mountain warfare under the operational use of the PLAA.[31]

A major component of the PLA is its emphasis on using the latest technologies in providing the troops with all necessary advantages. To meet this technological barrier, the PLA has begun research and invested large sums of money on next-generation weaponry and technologies, such as quantum computing and Artificial Intelligence (AI). Some of this next-generation weaponry includes microwave energy weapons[32] and railgun technology on their naval vessels.[33] This investment in high-tech weaponry is indicative of China's overall doctrinal aim of gaining the maximum advantage in any wartime situation.

Another aspect of the PLA is looking at quality over quantity, emphasised through their modernisation drives and focused on next-generation technology such as Quantum Computing in the fields of communications and radar technology. In June 2019, China announced the successful development of a new high-frequency surface wave radar system specifically designed to locate stealth aircrafts and is said to be immune from anti-radiation missiles.[34] This emphasis on quality can also be seen in the reorganisation of the PLA into a more effective fighting force, equipped with the latest in tracking technologies, fully integrated with their indigenous navigational system, Beidou.[35] Since the PLA does not have a lot of combat experience, it makes do with various simulations, mostly anti-NATO operations,[36] for training purposes. This reorganisation also ensures that each brigade of the PLA is equipped with both combat-ready forces and units to provide logistical support.

Downsizing of the PLAA

Notwithstanding the gradual decrease in the size of the PLAA from 3.46 million in 2010 to 3.21 million in 2020 (See Table 1), the major focus over the last decade has been to downsize and modernise the PLA into a more efficient force. While this focus on modernising the PLA has been in place for over a decade now, a

b The current Sino-Indian stand-off along the Line of Actual Control (LaC) erupted when Indian forces detected the presence of Chinese forces on India side of the LaC in early May 2020. The PLAA controls tactical heights that Indian forces used to patrol at the Panggong Tso in Ladakh, which is part of the Western sector of the two countries contested boundary. Chinese seized some territory in the Galwan River Valley and another called Hot Springs in the Western sector. The PLAA has also made a minor ingress into the Naku La in the Indian state of Sikkim in the central sector, which has a mutually recognized boundary between India and China. In addition, Chinese and Indian militaries are deploying and amassing forces against each other across the entire stretch of the LAC. Negotiations are currently underway to put an end to the stand-off at the military and diplomatic levels.

coherent blueprint has emerged under President Xi Jinping. The constant reference to 'optimising' the PLA's scale and its structure to construct a "modern military force" has been openly espoused since 2015,[37] despite being adopted much before. In 2016, the CMC established an outline for military reform till 2020, emphasising on the transformation of the PLA from a "quantitative" to "qualitative" force, essentially creating an "optimisation of ratios" between its services.[38] Xi, in the Chinese Communist Party's 19th National Congress held in 2017, succinctly portrayed the two-stage plan for the country's future. The first is to complete a "socialist modernisation"[39] by 2035. And the second stage is to become a "global leader in terms of composite national strength and international influence"[40] by 2049. For these reasons, the downsizing and the efficient optimisation of the remaining personnel of the PLA has remained of prime importance.

The change in focus from the PLAA to its allied services like the People's Liberation Army Navy (PLAN), the People's Liberation Army Air Force (PLAAF), the People's Liberation Army Rocket Force (PLARF) and the People's Liberation Army Strategic Support Force (PLASSF) has necessitated a downsizing of the PLA and a redistribution of its resources. These four services are key in providing the PLA the ability to securitise its logistical geographies to protect the "socialist modernisation", and expand its military capabilities in more distant places to increase its "international influence" and emerge as a "global leader". This transfer of resources has been taking place over the last decade, with 2018 being the first time since 1949 that the PLA's share in the military dropped below 50 percent, while the share of the other services expanded.[41] This change in focus from the PLA to its associated services comes under what the White Paper of 2019 phrases as the new "Revolution in Military Affairs" through "mechanisation" and "informationization,"[42] which is based in an age where non-contact warfare through cyber, electronic and other means is making manpower increasingly redundant.

Table 4: Number of College Students Recruited in China (2001-2014)

Year	College Students Recruited	Year	College Students Recruited
2001	> 2,000	2008	38,000
2002	3,000	2009	130,000
2003	~ 2,000	2010	> 100,000
2004	~ 2,000	2011	> 100,000
2005	~ 2,000	2012	> 100,000
2006	Not Released	2013	~ 140,000
2007	Not Released	2014	~ 150,000

Sources: the *PLA Daily* and the *NetEase News Center* in W. Shumei, "The PLA and Student Recruits: Reforming China's Conscription System", in *Asia Paper: Institute for Security and Development Policy*, Sweden, 2015.[43]

Since 2001, the central focus has been to decrease the recruitment of high school students and instead increase the intake of college graduates into its various services to make the PLA a high-tech and modern force. This has seen a certain degree of success, with the number of college graduates recruited increasing from a mere 38,000 in 2008 to around 150,000 in 2014 (See Table 4). However, high school students still continue to comprise a significant share of recruits.[44] Part of the problem of recruiting college graduates is that the PLA not only faces an ageing national demographic profile but also has to compete with the more lucrative private and public sectors, which has proven to be exceedingly difficult.[45] To counter these difficulties, in January 2020, the PLA changed its recruitment process from yearly to biannually.[46] While the modernisation of personnel remains central to the CMC, their success remains in their ability to attract and provide incentives in a military career to college graduates.

THE PEOPLE'S LIBERATION ARMY NAVY

Among the most crucial areas of Chinese military modernisation is the expansion of its naval capabilities. The Gulf War of 1991 and the Taiwan Strait Crisis of 1995-1996 changed Chinese perceptions on having a competent navy to promote the country's maritime defence. The naval expansion was conducted in three phases. First is coastal defence—a "brown water defensive capability" of the immediate shoreline; second is to dominate areas up to the First Island Chain; and the third is a blue water navy going beyond the second island chain.[47] The PLAN is currently the third phase of expansion, even as it continues to further strengthen its Anti-Access/Area Denial capabilities.[48]

The PLAN has made progress in both the surface and subsurface segment of its fleet. In the subsurface domain, the PLAN has acquired 12 Russian-made Kilo Class conventional submarines since the mid-1990s and added four indigenously developed submarines. These include a Jin Class 'Type 094' nuclear powered ballistic missile submarine (SSBN) and a new Shang Class 'Type 093/093' nuclear attack submarine (SSN). The latest addition to the PLAN is the SSN dubbed the Song Class 'Type 039/039G'.[49] Each of the Jin Class submarines will be equipped with 7,400-kilometre range JL-2 nuclear-armed submarine launched ballistic missiles. In April 2020, the PLAN put into service two new upgraded Type 094A SSBNs with enhanced radar, sonar and torpedo systems.[50] Notably, Chinese gains in the submarine domain are the by-product of Russian designs.[51] After initial rumours of Chinese Unmanned Underwater Vehicles (UUVs) being capable of anti-submarine surveillance and intelligence gathering in distant waters amongst other things,[52] China showcased its cutting edge capabilities in UUVs at its military parade in October 2019.[53] While these capabilities reflect an advancement in the PLAN's subsurface nuclear fleet, there is a crucial weakness in that it demonstrates China's dependence on Russia for critical subsystems and design engineering, if not entire platforms.

The Chinese navy's surface fleet has also undergone improvement. In mid-2019, China launched two new Type 052D guided-missile

destroyers, increasing its tally of Type 052D destroyers to 20.[54] In April 2020, China launched its second Type 075 amphibious assault ship following the launch of its first one in late 2019.[55] The Type 075 is estimated to be the third largest amphibious assault ship in the world, capable of carrying 30 helicopters, armoured vehicles, jet boats, amphibious tanks, hundreds of marine troops, amongst other things.[56] The new multi-role medium-lift helicopter Z-20 is likely to be used for amphibious warfare by the PLAN.[57] Furthermore, the CMC has highlighted the fact that the PLAN is on course to have three conventional aircraft carriers, long with the construction to two nuclear powered carriers in the future. The PLAN already has two aircraft carriers, the Liaoning (of Soviet origin, completed by the PLAN) and the Type 002 (first indigenously produced carrier).[58] The air arm of the Liaoning can consist of a combination of 36 fixed wing and rotary wing aircraft including 24 J-15 fighters, six anti-submarine warfare helicopters, four airborne early warning helicopters, and two rescue choppers.[59] Interestingly, rumours point out the possibility of China unveiling the 'sharp sword stealth drone' for its new Type 001A aircraft carrier in the near future.[60] However, another UAV, the supersonic DR-8 was released in the weeks leading upto the military parade of 2019 and is expected to play a key role in conflicts with the US aircraft carrier strike groups in maritime conflict.[61]

China is also planning for the development of its next-generation SSBN, the Type 096, which will be capable of carrying 24 JL-3s and is estimated to have a range exceeding that of 10,000 kilometres.[62] The JL-3, which was successfully test fired in May 2020, is alleged to be capable of reaching the US if launched from the Chinese coast.[63] Furthermore, the PLAN's long-term ambitions include the acquisition of nuclear-powered carriers, resulting in two carrier strike groups operating in the Western Pacific and an additional two groups in the Indian Ocean.[64] These nuclear powered carriers will inevitably use electromagnetic catapult systems for the launch of carrier-based fighter aircraft.[65] Notwithstanding an absence of experience in operating carriers, the PLAN's introduction of aircraft carriers provides additional weight to the Chinese navy's surface warfare capabilities.

THE PEOPLE'S LIBERATION ARMY AIR FORCE

The PLAAF has also witnessed significant improvements in its capabilities. Changes in the PLAAF's fighter fleet were evident since its acquisition of a small number of fourth-generation fighters in 1996. However, weaknesses are also evident from internal assessments of some platforms of its fighter fleet.

Since the mid-1990s, the PLAAF's numbers have swelled to 30 percent of the force. By 2015, the size increased to roughly 51 percent of the fighter fleet of the PLAAF.[66] It is estimated that the Chinese fourth-generation fighter fleet increased from 383 to 736 jets between 2010 and 2015, a 92 percent jump in air combat power.[67]

Today, China operates roughly 1,200 short- range fighters. In service in the PLAAF's fleet are 400 J-7 fighters, which are

reasonably efficient aircraft. Yet the J-7 fighter strength will decrease in numbers, replaced, as noted earlier, with more advanced fourth-generation jets. The PLAAF's fleet strength stands at approximately 1,977 aircraft.[68]

The PLAAF is also driven to developing stealth capabilities for a segment of its fighter fleet. The testing of its much-awaited J-20 fighter began in July 2014,[69], which has been showcased briefly in 2018[70] and 2019.[71] J-20's AL-31 engine is Russian built, and the Chinese have sought to substitute it with their own engine called the Taihang. Yet they are still unsure of the Taihang's reliability as compared to its Russian counterpart. Consequently, they are undertaking developmental tests for another engine dubbed the WS-15 as an indigenous replacement for the AL-31.[72] More than its size, the crucial strength of the PLAAF lies in its establishment of a dense air defence network.[73]

There has also been significant progress in the research and development of sixth-generation fighter aircraft within the PLAAF.[74] This sixth-generation aircraft is supposed to come equipped with its own auxiliary drones and AI integration, while also providing the PLAAF with across-the-board developments in its basic systems.[75] This generation of fighter aircraft is supposed to be inducted into the PLAAF by 2035. This sixth-generation fighter jet is emblematic of the emphasis the PLA has been placing on the role of technology in the conflicts of the future and its importance as not only a force multiplier, but an instrument to ensure decisive victory at the lowest cost.

THE PEOPLE'S LIBERATION ARMY ROCKET FORCE

The PLARF (formerly known as the PLA Second Artillery Force) is the custodian and end-user of China's nuclear and missile forces. At its birth, the PLARF was tasked primarily with operating nuclear-tipped missiles. For several years, China's nuclear-armed missile arsenal was saddled with a range of problems such as poor accuracy, protracted launch schedules and a relaxed alert posture. However, they were compatible with Beijing's declared No-First Use (NFU) policy and a doctrine enshrining Credible Minimum Deterrence (CMD).[76] A combined CMD-NFU policy necessitates only a small missile force that is capable of surviving a first strike and retaliating against the enemy's counter value targets. However, the same restrictions are inapplicable to conventional strike missions, a role the PLARF was ordered to perform. These recent technological advances have improved the PLARF's strength in terms of survivability, accuracy and an invigorated capability for Chinese conventional missiles. Indian experts also agree that China is developing a strong second-strike nuclear capability, particularly vis-à-vis the US,[77] despite the limited size of its arsenal. Most independent analyses still support China's adherence to NFU and a limited arsenal. The focus is entirely on security, accuracy, reliability and assured delivery. However, important changes are taking place in these areas as well.

The deployment of Chinese nuclear-armed ballistic missiles continues apace for Beijing to maintain regional nuclear deterrence. In the long term, its conventionally armed, medium-range ballistic missile forces are undergoing

rapid change for the conduct of high-intensity regional military operations. To sustain this effort, the missile component of China's regional military nuclear deterrent posture includes land-based nuclear-armed CSS-6 Mod 2 missiles.[78] Its conventional Medium Range Ballistic Missiles consist of CSS-5 missiles.[79] Beijing's conventional missile capabilities are primarily directed against the adversary's logistical nodes, communication links, facilities, and regional military sites such as air and naval bases.[80]

Complementing the modernised expansion of its nuclear and missile forces, Chinese space military capabilities are also being augmented. Today, China deploys and operates a proven Kinetic Anti-Satellite (ASAT) capability. It is making significant investments in ballistic missile capabilities to destroy satellites in geosynchronous orbit and the Beidou satellite navigation system, whose last satellite was launched into orbit on 23 June 2020,[81] making it completely independent of the American GPS navigation constellation and forms an integral part of its military planning.[82] The ground nodes of its space segment have also been expanded, with China establishing satellite tracking stations within the mainland and in states such as Pakistan, Namibia and Chile.[83] In December 2015, following the CMC reforms, the PLA reached a milestone establishing new services by first converting the Second Artillery into the PLARF, which it complemented with the creation of the PLASSF, which blends electronic, space and network warfighting capabilities into a single service.[84] Integrating weapons and developing a networked capability into a single service represents progress. However, the question remains whether the PLA is capable of inflicting quick and decisive blows against any potential adversary through joint operations.

The PLARF has also been researching and developing newer delivery vehicles for its missile arsenal, investing heavily in Hypersonic Glide Vehicles as a faster means of delivery. In its 2019 national parade, China for the first time unveiled its long awaited Dong Feng-41 (DF-41) intercontinental strategic nuclear missile on 16 upgraded launchers.[85] More importantly, the new DF-17 hypersonic missile with its cutting-edge manoeuvrability, which is known to be extremely difficult to counter, was also unveiled at the 2019 parade.[86]

Furthermore, Chinese military sources allege that the Xian H-20 supersonic stealth bomber, which is projected to double China's striking range and complete China's "triad of submarines, ballistic missiles and bombers," is expected to be unveiled in November 2020.[87] The successful development of these better delivery systems is a cause for concern for many of China's adversaries, such as the US or India. These delivery systems also signal China's move towards next-generation weaponry, and quality over quantity.

EVALUATION OF THE PLA DOCTRINE AND COMBINED ARMS WARFARE CAPABILITIES

How do these Chinese capabilities fit into assessments (whether Chinese, Indian or any other) of the PLA's emerging doctrine and operational posture? What possibilities exist for jointness for the PLA and its supporting

arms? Indian assessments of China's emerging order of battle correlates strongly with measuring Chinese military strength in terms of actual military capabilities. From an Indian standpoint, Chinese modernisation since the initiation of military reforms is concentrated in two areas.

Despite improvements in the TTR, the PLA continues to face important challenges in the areas of jointness and efficiency. Optimising the fighting force to undertake combined arms warfare is a hurdle and remains a critical weakness. Command and Control (C2) for the conduct of joint operations is a universal problem in modern warfare.[88] A change in the PLA's warfighting doctrine stands in contradiction to the structures within which it is being operationalised.[89] The doctrine stresses decentralisation, whereas the operational culture of the PLA focuses on centralisation. Two factors of vulnerability undermine the PLA's C2 structure. First, the narrow or individual service interests of the PLA's fighting arms denude effective coordination and cooperation in joint operations.[90] Second is the primacy of ground-based officers assigned to critical command billets,[91] who could potentially constrain effective coordination and synchronisation in joint operations.

Compounding these woes is the absence of Joint Command and Personnel and the necessary means for the training, planning, and execution of combined arms warfare.[92] These deficiencies were addressed by Xi in what can be said to be one of the greatest overhauls to the PLA force organisation. This reorganisation of the PLA into five theatre commands, each with its own political commissar is one of the methods the Communist Party of China (CPC) is overtly reasserting its control over the PLA. This ensures no decision-making process occurs without a party member present, in line with Xi's need to ensure the PLA remains loyal to the party and no action it takes is to the detriment of the latter. While this reorganisation streamlines the command structure of the PLA, the CPC has also addressed the problem of jointness in operations through the appointment of naval officers to command the theatres of the mainland. While the only naval commander in the newly organised PLA is Vice Admiral Yuan Yubai[93] (who is commander of the Southern Theatre), this signals an increasing effort from the CMC in ensuring that jointness in command and operations is achieved. It is clear that the CMC is ensuring the PLA incorporates a joint command structure to better integrate the different services into a single operational fighting force. These improvements can spell danger to the Central Asian republics that border China and strengthen Beijing's power projection capabilities into the Indian Ocean Region .[94]

A second Indian perspective assesses that China's military modernisation dovetails Beijing's increasingly assertive foreign policy, a pattern that has been evident since 2008.[95] The PLA is gearing its forces for new military missions and goals. Modernisation also serves the purpose of safeguarding Chinese interests and protecting Chinese expatriates living and working in countries that are part of the Belt and Road Initiative (BRI).[96] Stretching from the Eurasian region to the Western Pacific, China,

through military exchange programmes, is increasing interoperability with the BRI countries, which field Chinese weapons systems.[97] China has modernised its forces to win informationised local wars. For this brand of warfare, the PLA emphasises network centricity of all weapons systems at sea, air and land connected in real time for the effective use of its weapons to service mission objectives and the protection of military assets.[98]

The thrust of the PLA's modernisation is on non-contact wars that rely on psychological operations that compel the enemy into submission without an *actual* military engagement. Notwithstanding the bloody clashes between Indian and Chinese forces on 15 June, the PLAA territorial seizures that preceded it in Ladakh at Hot Springs, Pangong Tso and Galwan exemplify this form of warfare. This is reinforced by the PLA's development of a strong navy, air force and army, and the prosecution of special warfare operations at far seas.[99] There is evidence to suggest that the PLA is deliberating the creation of a strategic support force to sustain out-of-area operations and missions. Joint command at the highest combat level is mandatory for the PLA.[100] A corollary to this assessment of the PLA's order of battle is the separation between its conventional and nuclear chain of command. Of particular relevance to India is the PLA's establishment of the Tibetan Military Command.[101] Beijing also seeks to engage in non-contact conflict, which places a high premium on political and psychological dimensions of warfare.[102] Fighting a war and subduing the enemy without incurring steep losses is thus one of the major aspects of the PLA through the introduction of advanced technologies such as ASAT weaponry[103] to target space assets and the institution of the Strategic Support Forces to conduct operations in non-traditional domains such as space and cyberspace[104] to provide the PLA with the necessary force multipliers to wage any type of non-contact warfare.

A third Indian perspective is generally consistent with the first two. Since China's CMC reforms, there will be a flattening of the higher military command such that it will be more streamlined with potentially considerable delegatory power to lower echelon commanders in the PLA's newly instituted combat-zones.[105] This is consistent with recent non-Indian assessments as well as internal Chinese reports that there is an ongoing effort at improving the PLA command performance in joint operations through training courses.[106] This implies that proficiency in C2 operations is still a work in progress. It is a critical requirement and remains a benchmark of the PLA to emulate the successful American conduct of joint operations in the 1991 Persian Gulf War.

Yet this perspective on the ultimate goals of Chinese foreign policy diverges with the preceding two. The thrust of Chinese foreign policy will be on increasing its political influence,[107] presumably also with those with whom it has disputatious relations such as India and the other states around the Chinese rim land. In contrast to the second perspective, China will progressively move from informationised war to a war driven by AI.[108] To sustain the latter, China has been making ceaseless efforts to develop AI that to surpass the US in the field.[109] It is possible that

China is planning and pursuing a combination of both informationised, and AI- based wars for the successful prosecution and conduct of C2 operations.

All of this brings into question the need for the rapid restructuring of the PLA as a whole. Seeing the evolution of the PLA doctrine, and of China, moving from Deng's doctrine of "hide your strength, bide your time" to the more contemporary form where Xi's determination to make China the centre of world trade, has put a lot of pressure on the CPC to ensure they do not appear to be a nation with a weak military. To that end, as part of Xi's reforms, each of the theatre commands have both a military official and a CPC commissar within their command structures. The institution of commissars in the PLA theatre commands showcases Xi's need to project the PLA as the military wing of the CPC, leaving no questions on where their loyalties lie. Additionally, projects such as the BRI, already seeing massive amounts of infrastructure construction, also pose a problem of security. This, coupled with Xi's ideal of having a military that can fight and win,[110] the uncertain nature of international systems and the consequences that can arise from it, and the fear of the CPC's legitimacy being questioned has led to him asserting greater control over the CMC and the CPC, while simultaneously ensuring the uncertainties around the globe do not hamper China's progress in any way.

Xi does not want to leave anything to chance when it comes to securing his grip over the party and the military, ensuring these elements will serve his larger and more ambitious goal of making China an economic powerhouse.

CONCLUSION

Since the rise of Xi to the position of General Secretary of the CPC, the PLA has become a better force qualitatively, and capable of fighting any battle on any kind of terrain at a moment's notice. The PLA has undergone significant changes in its structuring and technological developments to make it a leaner and more efficient fighting force. However, no other branch is more significantly upgraded than the PLAN. The once neglected PLAN is now on track to becoming the dominant naval force in China's near and far seas. Indigenous production has been one of the cornerstones of the PLA's modernisation drive, and nothing else drives this point home other than PLAN's first indigenously produced aircraft carrier.

The PLAAF and PLARF have also seen technology play a major role in their development through the introduction of drones and UAVs, and research into the integration of AI in their next-generation aircraft and weaponry. Their emphasis on quality has also led to them focusing more on the delivery of their warheads, rather than the warheads themselves.

The modernisation drives discussed in this brief help underscore an important point in the machinery of the CPC since Xi became general secretary. Xi has emerged as another version of Mao Zedong, with some of the same aspirations and fears as his predecessors. However, Xi's ambitions of making China the centre of the modern economic world have led him to make serious changes to ensure that his vision will have the security of a modernised and battle-ready PLA, capable of taking the

fight to the enemy if need be. Specifically, China has progressively created a favourable asymmetry in military strength to pose serious capability-related, operational and logistical challenges for its immediate neighbours, including India. Through this modernisation, Xi also hopes to show the rest of the world that China is a force to be reckoned with in the post-COVID-19 world, and that it is a country that has learnt from its past failures and is today stronger than it has been in many years. ORF

ABOUT THE AUTHORS

Kartik Bommakanti is Associate Fellow, and **Anant Singh Mann** is a Research Intern at ORF.

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20, Rouse Avenue Institutional Area, New Delhi - 110 002, INDIA
Ph. : +91-11-35332000 Fax : +91-11-35332005
E-mail: contactus@orfonline.org
Website: www.orfonline.org