Modernisation Plans Need a Major Boost

Gurmeet Kanwal

New procurements have commenced… but we are still lagging by 15 years.

— Defence Minister A K Antony

Modernisation Dilemma

As an ancient civilisation but a young nation that is still in the process of nation building, India faces many threats and challenges to its external and internal security. The foremost among these are the long-festering dispute over Jammu and Kashmir (J&K) with Pakistan and the unresolved territorial and boundary dispute with China. Since its independence from the British on August 15, 1947, India has been forced to fight four wars with Pakistan (1947-48, 1965, 1971 and 1999) and one with China (1962). India's internal security environment has been vitiated by a 'proxy war' through which Pakistan has fuelled an uprising in J&K since 1988-89. Various militant movements in India's northeastern states and the rising tide of Maoist terrorism in large parts of central India have also contributed to internal instability. India's regional security is marked by instability in Afghanistan, Bangladesh, Myanmar, Nepal, Pakistan and Sri Lanka.

With personnel strength of approximately 1.1 million soldiers, the Indian Army has made a huge contribution towards keeping the nation together, particularly in facing internal security challenges. It is a first-rate army but has been saddled for long with second-rate weapons and equipment, despite heavy operational commitments on border management and in counter-insurgency

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operations. The modernisation dilemma that the Indian Army faces is that the budgetary support available for modernisation is grossly inadequate. It can undertake substantive modernisation only by simultaneously effecting large-scale downsizing so as to save on personnel costs – the largest chunk of the army's annual budget. However, it would not be prudent to downsize as the army's operational commitments on border management, and internal security duties require large numbers of manpower-heavy infantry battalions. Hence, it is a Catch 22 situation!

India's defence budget is pegged at approximately 2.0 per cent of the country's Gross Domestic Product (GDP). Of the total defence budget of Rs 1, 47,344 crore for Financial Year 2010-11, the army's share is Rs 74,582 crore. Of this, Rs 58,995 crore is on account of Revenue Expenditure (pay and allowances, rations, fuel, ammunition, etc) and only Rs 15,587 crore (26.42 percent) is available on the Capital Expenditure account for modernisation schemes. Because extremely limited funds are made available for modernisation and a large portion of these is surrendered year after year due to scams and bureaucratic red tape, the Indian Army has almost completely missed the ongoing revolution in military affairs (RMA).

If this state of affairs continues much longer, the quantitative military gap with China will soon become a qualitative gap as well, as China is continuing to modernise its armed forces at a rapid rate. China's defence budget has been growing at a double-digit rate annually for about a decade. Also, the slender conventional edge that the Indian Army enjoys over the Pakistan Army will be eroded further as Pakistan is spending considerably large sums of money on its military modernisation and is getting weapons and equipment from the United States at subsidised rates – ostensibly for fighting the so-called global war on terror. Given the collusive nuclear, missile and military hardware nexus between China and Pakistan, the then Chief of the Army Staff (COAS) had stated at the Army Training Command's seminar on army doctrine in December 2009 that the army must prepare to fight a war on two fronts. Unless the budgetary support available

for modernisation increases substantially over the next decade, this will remain an aspirational doctrine.

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Chinks in the Armour

On Army Day 2010, the then COAS had admitted that a large number of India's battle tanks are "night blind". The indigenously designed Arjun main battle tank (MBT) had consistently failed to meet the army's General Staff Qualitative Requirements (GSQR) for an MBT for almost two decades, but now orders have been placed for 124 tanks to be manufactured to equip two regiments. While Pakistan has acquired 320 T-80 UD tanks and is on course to add the Al Khalid tanks that it has co-developed with China to its armour fleet, vintage T-55 tanks continue in the Indian Army's inventory despite their obsolescence. Consequently, 310 T-90S MBTs had to be imported from Russia.

Since the lack of progress on the Arjun MBT had significantly slowed down the pace of armour modernisation, in the year 2000 India signed a deal with Russia to acquire 310 T-90S tanks and assemble 1,000 in India. In December 2007, a contract was signed for 347 additional T-90S tanks to be assembled in India. The first Indian assembled T-90S (Bhishma) rolled off the production line on January 8, 2004. Meanwhile, a programme has been launched to modernise the T-72 M1 Ajeya MBTs that have been the mainstay of the army's strike corps and their armoured divisions since the 1980s. The programme seeks to upgrade the night fighting capabilities and fire control system of the tank, among other modifications. Approximately 1,700 T-72 M1s have been manufactured under licence at the Heavy Vehicle Factory (HVF), Avadi. The BMP-1 and the BMP-2 infantry combat vehicles (ICVs), which have been the mainstay of the mechanised infantry battalions for long, are now ageing and replacements need to be found soon. The replacement vehicles must be capable of being deployed for internal security (IS) duties and counter-insurgency (CI) operations in addition to their primary role in conventional conflicts.

It is time to phase the obsolescent T-55s out of service as they can no longer be either upgraded or modernised. The Defence Research and Development Organisation (DRDO) has commenced the conceptual stage development of the future main battle tank (FMBT) and future infantry combat vehicle (FICV) for the 2020-25 time-frames. The T-90S Russian tanks have provided new teeth to India's strike formations in the plains and corrected the imbalance

that had resulted from Pakistan's acquisition of T-80 UD from Ukraine and the Al Khalid tanks jointly designed with China. Hence, armour modernisation is proceeding apace but cannot yet be classified as a success story.

Obsolescent Artillery and Air Defence

Despite the lessons learnt during the Kargil conflict of 1999, where artillery firepower had undeniably paved the way for victory, modernisation of the artillery continues to lag behind. The last major acquisition of towed gun-howitzers was that of about 400 pieces of 39-calibre 155 mm FH-77B howitzers from Bofors of Sweden in the mid-1980s. New tenders have been floated for 155mm/ 39-calibre light weight howitzers for the mountains and 155mm/52-calibre long-range howitzers for the plains, as well as for self-propelled guns for the desert terrain. As re-trials have not yet commenced, it will take almost five years more for the first of the new guns to enter service. It has been reported recently that the Ministry of Defence (MoD) is in the process of acquiring 145 155mm/ 39-calibre M777 howitzers for the mountains through the foreign military sales (FMS) route from the US in a government-to-government deal. The M777 howitzer is undergoing desert trials at the time of writing. The artillery also needs large quantities of precision guided munitions (PGMs) for more accurate targeting in future battles. The present stocking levels of PGMs are rather low.

A contract for the acquisition of two regiments of the 12-tube, 300 mm Smerch multi-barrel rocket launcher (MBRL) system with 90 km range was signed with Russia's Rosoboronexport in early-2006. If this weapon system had been available during the Kargil conflict, Pakistan's Brigade Headquarters (HQ) and forward airfield at Skardu and other targets deep inside Pakistan Occupied Kashmir (POK) could have been hit with impunity. The BrahMos supersonic cruise missile (Mach 2.8 to 3.0), with a precision strike capability, very high kill energy and maximum range of 290 km, was inducted into the army in July 2007. These terrain hugging missiles are virtually immune to counter-measures due to their high speed and very low radar cross-section.

A contract worth Rs 5,000 crore has also been signed for the serial production of the Pinaka MBRL weapon system, another DRDO project plagued by time delays and completed with help from Larsen and Toubro and the Tatas. The Pinaka rockets will have an approximate range of 37 km. These three weapon systems together will provide a major boost to the artillery's ability to destroy key targets at long ranges. It is also time to now consider the induction of unmanned combat air vehicles (UCAVs), armed with air-to-surface missiles,

into service for air-to-ground precision attacks. Extended range (ER) rockets are being introduced for the 122 mm Grad MBRL that has been in service for over three decades. The ER rockets will enhance the weapon system's range from 22 to about 40 km.

Counter-bombardment (US term counter-fire) capability is also being upgraded, but at a slow pace. At least about 40 to 50 weapon locating radars (WLRs) are required for effective counter-bombardment, especially in the plains, but only a dozen have been procured so far. In addition to the 12 AN-TPQ 37 Firefinder WLRs acquired from Raytheon, USA, under a 2002 contract worth US $200 million, Bharat Electronics Limited is reported to be assembling 28 WLRs. These radars will be based on both indigenous and imported components and are likely to be approved for introduction into service after extensive trials that are ongoing. The radar is expected to match the capabilities of the Firefinder system and will have a detection range of about 40 km. The indigenous sound ranging system for locating the positions of enemy guns based on the sound of their firing does not appear to be making worthwhile progress and may be shelved in favour of an imported system. In fact, it needs to be considered whether this relic of the two World Wars, that is rather cumbersome to deploy and maintain, deserves a silent burial as gun and mortar locating radars now provide accurate locations of enemy guns and mortars.

The Corps of Army Air Defence is also faced with serious problems of obsolescence. The Defence Minister, Mr. A K Antony, recently admitted that there are gaps in India's air defence coverage. While the allusion was primarily to the lack of sufficient radar coverage to detect aerial threats to India's air space, the air defence (AD) of field formations continues to be given a much lower priority than it deserves. The vintage L-70 40 mm AD gun system, the four-barrelled ZSU-23-4 Schilka (SP) AD gun system, the SAM-6 (Kvadrat) and the SAM-8 OSA-AK have all seen better days and need to be urgently replaced by more responsive modern AD systems that are capable of defeating current and future threats. The 25 km Akash and the short-range Trishul surface-to-air (SAM) missiles have not yet fully met the army's GSQR though orders are expected to be placed shortly for the Akash. The long-range SAM (LR-SAM, 70 km) and the medium-range SAM (MR-SAM) projects are being undertaken by the DRDO with Israeli help. This is one area where the army has lagged behind seriously in its modernisation efforts.

Infantry Modernisation

The Indian Army is extensively engaged in ongoing IS and CI and simultaneously

needs to prepare itself for a future border conflict that may spill over to a larger conventional war in the plains. In keeping with these twin requirements, Army HQ have apparently decided to upgrade the IS and CI capabilities of infantry battalions as well as enhance their firepower-mobility-EW (electronic warfare) punch for a possible war in the plains against Pakistan or in the mountains against China. The army chief's modernisation vision is to "adapt to high-end technology, improve night-fighting capability… (and) information technology, information warfare and network centric warfare."

Despite its large-scale employment on border management and extensive commitments in IS and CI operations, infantry modernisation had been languishing for several decades when the MoD finally cleared a visionary plan to modernise the army's infantry battalions by according "in principle" approval in the form of Modification 4B to the war establishment (WE) of a standard infantry battalion in 1998. However, no funds were specially sanctioned for this purpose till the Bharatiya Janaa Party (BJP)-led National Democratic Alliance (NDA) government approved the expenditure of Rs 3,500 crore in September 2003. Thereafter, approval had to be sought on file for each new weapon system or piece of equipment on a "case-by-case" basis as has become the norm. It is by now well-known how each such case chronicles the saga of an uphill struggle to get approval first from the MoD, then MoD (Finance) and, finally, the Ministry of Finance (MoF). All this is only possible after the DRDO has first certified that the weapon system or equipment in question cannot be developed and manufactured indigenously and such a certificate is hard to come by. Gradually, these archaic procurement and acquisition procedures are being reviewed and improved.

The army's F-INSAS (future infantry soldier as a system) project focusses on enhancing the lethality and survivability of soldiers. It seeks to transform soldiers into fully networked, mobile warriors with a high degree of situational awareness and the ability to operate in all weather conditions in all types of terrain. The programme envisages equipping infantrymen with lightweight integrated helmets with a 'head up' display with a built in communication system and night vision goggles, hand-held computer display, global positioning system (GPS) and lethal firepower, including laser-guided weapon systems at appropriate levels. A global tender for 43,000 close-quarter battle carbines was issued in early-2008. The acquisition will be followed by the local manufacture of approximately 1, 17,000 carbines.

While 250 Kornet-E anti-tank guided missiles (ATGMs) with thermal imaging sights have substantially increased the anti-tank capability of infantry battalions,

most efforts to modernise the equipment held by the infantry and Rashtriya Rifles (RR) units are aimed at enhancing their capability for surveillance and target acquisition at night and boosting their firepower for precise retaliation against infiltrating columns and terrorists holed up in built-up areas. Two-hundred hand-held battlefield surveillance radars (BFSRs) with practical ranges up to seven to eight km where clear line of sight is available, 2,000 hand-held thermal imaging devices (HHTIs) with ranges up to 2,000 metres for observation at night and stand-alone infra-red, seismic and acoustic sensors with varying capabilities have enabled infantrymen to dominate the Line of Control (LoC) so completely that infiltration has come down to almost a trickle.

The newly acquired weapons, which complement these surveillance and observation devices, include: 1,500x84 mm rocket launchers, including some disposable ones; 1,000 AMRs (anti-material rifles); 8,000 UBGLs (under-barrel grenade launchers); 4,000 new generation carbines; 300 bullet proof vehicles; and, several hundred accurate sniper rifles. However, the numbers acquired and the ammunition stocks are still inadequate and need to be made up more rapidly. While the INSAS 5.56 mm assault rifles have now been in service for almost 10 years and proved to be effective, the light machine gun (LNG) version is still facing teething problems and the carbine version for close quarter battle has not found favour with the army. New 5.56 mm assault rifles of bull-pup design with an integrated laser range finder and grenade launcher are under development. Efforts are also being made to provide infantry platoons and sections with integrated GPS-based navigation system, secure lightweight walkie-talkie radio sets and better protective gear with a helmet that incorporates a built-in head-up display.

The mechanised infantry is now equipped with about 2,000 BMP-1 and BMP-2 ICV Sarath of which over 1,000 have been built since 1987. A new variant is the 81 mm carrier mortar tracked vehicle (CMTV) that is based on the chassis of the Sarath ICV and has been indigenously developed to enhance the integral firepower available to mechanised infantry battalions. Other variants include a command post, an ambulance, armoured dozer and engineer and reconnaissance vehicles. Mechanised reconnaissance and support battalions need better surveillance radars, fire-and-forget ATGMs and effective night fighting capability. However, their capabilities can be upgraded on a lower priority compared with infantry battalions that are engaged in border management and IS/CI operations. The MoD issued a Request for Proposal (RfP) for 300 light tanks and 100 wheeled armoured personnel carriers (APCs), including some for the

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mountain sector in November 2009. Plans to buy light strike vehicles for counter-insurgency operations may also be considered.

The army's infantry battalions also need their own mini or micro unmanned aerial vehicles (UAVs) like Elbit's Skylark or Rafael's Skylite, among others, to partly reduce the extent of patrolling necessary in the internal security environment and to improve their surveillance capability in conventional conflict. These UAVs should have a range of about 10 to 15 km, should be lightweight (less than 10 kg), hand-launched, carry a single payload, e.g. a daylight video camera or infra-red camera for night operations, and should be inexpensive enough to be dispensable. A mini ground control station should be authorised at Battalion HQ for planning and control. Ideally, these should be indigenously designed and developed and locally manufactured.

A new DRDO project that is reported to be ongoing, aims to equip future soldiers with lightweight force multipliers. Soldiers of the future will have miniaturised communication and GPS systems, small power packs, weapons platforms and smart vests with fibre-optic sensors. The soldiers will also have better and lighter combat fatigues, boots, belts, ammunition pouches, rucksacks and rations in the form of meals-ready-to-eat. Though somewhat akin to the US Army's Land Warrior programme, the Indian Army programme for modernisation of infantry battalions will result in only incremental changes. However, these would be significant enough to make a difference on the future battlefields of the Indian subcontinent. The infantryman's average combat load is approximately 27 kg, including the 3.06 kg 5.56 mm INSAS assault rifle and its "on weapon" ammunition. If this can be reduced by even a few kilograms, it will enable the soldier to improve his agility in battle and counter-insurgency operations. Ultimately, an infantryman has to be prepared to engage in hand-to-hand combat and agility can make a difference between life and death.

Another DRDO project that is well behind schedule is the Nag anti-tank missile system. The antiquated Jonga-mounted SS-11 B1 ATGM system has been replaced in missile battalions by the MILAN shoulder-fired ATGMs. However, a vehicle-mounted missile system like the Nag is definitely necessary for reconnaissance and attrition tasks and for anti-tank screens. For over 350 infantry battalions, plus about 150 Rashtriya Rifles, Assam Rifles and Territorial

Army battalions, these major changes will be extremely costly to implement and will spill over at least 10 to 12 years – that is, if the funds can be found. What is certain is that there is no alternative to making the financial commitment that is necessary to enhance the operational capabilities of the army's infantry battalions. Without modernising this cutting edge of its sword, the army will soon begin to resemble the armies of India's lesser neighbours.

The urgent requirement of real-time satellite reconnaissance systems has still not been operationalised despite the nuclear overhang under which the armed forces now operate.

Army Aviation

Modernisation of army aviation is also not making much headway. The aviation fleet continues to be based on vintage Chetak and Cheetah helicopters. The long-pending acquisition of 197 light helicopters has been mired in controversy. It was reported to have been awarded to Eurocopter and was then cancelled due to discrepancies in the tendering process. The US Company Bell Helicopter Textron Inc. is also in the race to win the contract. The only addition has been that of small numbers of Dhruv light utility helicopters for logistics duties. Upgradation of India's attack helicopter capabilities is also pending though a tender has been issued for 24 attack helicopters for two squadrons of the Indian Air Force (IAF). Medium and heavy lift capability also must be enhanced for effective troop transportation and logistics support in the mountains.

Communications, ISR and PGMs

An automated command and control and decision support system for use by the General Staff is still a far cry and so are supporting systems like the battlefield surveillance system and air space management system. The urgent requirement of real-time satellite reconnaissance systems has still not been operationalised despite the nuclear overhang under which the armed forces now operate. Even though the cameras on India's remote sensing and cartographic satellites now have sharply enhanced resolutions, less than one metre, military-grade photographs of still better resolution need to be purchased from the open market. These sources may dry up quickly during war.

A "system of systems" approach must be followed so that scarce reconnaissance, surveillance, and target acquisition (RSTA) and communications

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resources can be synergistically configured and optimally exploited. The war in Iraq fought in March-April 2003 was based on the concept of "network-centric warfare" in which surveillance sensors, targeting systems and "shooters" are fused together in a seamless "system of systems" that reduces response time between the acquisition of a target and its destruction to 15 to 20 minutes. While such a system may take over a decade to establish, a beginning must be made right away.

The experimental Plan AREN tactical communications system for strike formations needs early replacement. The ability to carry broadband data needs to be enhanced in particular. The system has been in service for almost three decades and is based on outdated and bulky technologies. While some modern frequency hopping radio sets with integral encryption devices have been introduced into service in recent years, networked communications, which form the backbone of an effective command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4I2SR) system, need substantial upgradation.

Tenders have been floated for a tactical communication system (TCS) for offensive operations and a battlefield management system (BMS) for communication at the tactical level in defensive operations. The BMS will be integrated with the ASCON communication system. The ASCON provides voice and data links between static HQ and those in peace-time locations. It still has some years of service left as it is of modular design and can be upgraded to a limited extent. However, ASCON lacks ISDN capability for the real-time transmission of maps and streaming video and its capability to provide data links is rather limited as data requirements have grown by leaps and bounds over the last decade or so. The new optical fibre network being laid as an alternative to the 3G spectrum freed by the armed forces for civilian use will go a long way in providing modern land-line communications.

According to the former Director General Internal Security (DGIS) Lt Gen Prakash Katoch (Retd), the tactical command, control, communication and information (Tac C3I) system is being developed. Under this mother system, various other systems such as CIDSS (command information decision support system), ACCCS (artillery combat command and control system), BSS

(battlefield surveillance system), ADC&R (air defence control and reporting system), and BMS (battlefield management system) are being developed. Efforts are also underway to finalise a net-centric warfare (NCW) philosophy. A tri-Service defence communication network (DCN) is in the stage of advanced planning. However, little progress has been made towards addressing inter-Service interoperability challenges in the communications field. An RfP for the DCN system is expected to be issued in 2010. Cyber security and offensive cyber warfare are other areas that do not appear to have received the attention that they deserve. With China moving rapidly towards creating "one million laptop warriors," neglecting this field will prove to be very costly in the long term.

The government must give a firm commitment in terms of funds and the Ministry of Defence must streamline its procedures and processes for speedy procurement of high priority weapons and equipment.

While some Stentor long-range BFSRs have been in service for over a decade, medium-range radars are still to be acquired. Israeli Searcher-I UAVs have been introduced into service but these are few in number and it will be a long time before these will really make a difference by providing a real-time surveillance capability so that ground forces can initiate action even as a fresh input is received. Only a small number of Searcher–II UAVs, with an upper ceiling that makes them suitable for the mountains, have been acquired. Indigenously designed UAVs that are in the design and development pipeline include the Gagan, Pawan and Rustom. Pilot-less target aircraft include Lakshya and Nishant. India does not as yet have a programme to either acquire or indigenously produce unmanned combat air vehicles (UCAVs) of the Predator variety being used to kill terrorists in the Af-Pak region by US and North Atlantic Treaty Organisation (NATO) forces.

PGMs are increasingly gaining currency as weapons of choice in conflict on land, both to accurately destroy critical hard targets quickly as well as to avoid or at least minimise collateral damage. During Gulf War I in 1991, despite all the CNN-generated hype of smart bombs flying unerringly through ventilators, PGMs formed less than 10 percent of the total high explosives dropped over Iraq and were rather inaccurate. The "collateral" destruction of an air raid shelter harbouring women and children has been too well documented to bear recounting. The coalition forces did not destroy a single Iraqi Scud missile launcher. In Kosovo, PGMs accounted for about 30 per cent of the ordnance

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dropped and accuracies had improved considerably by 1999. In the post-September 11, 2001 retribution inflicted on the Taliban militia and its Al Qaeda supporters in Afghanistan, the share of PGMs had risen to nearly 60 percent. In Gulf War II in Iraq, the ratio of PGMs went up to nearly 70 per cent. The Indian artillery does not have PGMs in quantities large enough to matter. Only limited quantities of the Russian Krasnopol PGM have been imported for the Bofors 155 mm howitzer. Among others, the Bofors Bonus PGM is a suitable candidate, subject to successful trials in the deserts and the mountains.

Conclusion

The approach to army modernisation must be more focussed; the priorities must be clearly established and then adhered to. The government must give a firm commitment in terms of funds and the Ministry of Defence must streamline its procedures and processes for speedy procurement of high priority weapons and equipment. It is time to institute a rolling, non-lapsable defence modernisation fund of Rs. 50,000 crore as a viable method of ensuring that defence procurement is not subjected to the vagaries of annual budgets. Doctrine, organisation and training standards must also keep pace with technological modernisation to make the Indian Army a 21st century force to be reckoned with. The present situation is not conducive for long-term planning and, if allowed to go on indefinitely, will seriously compromise the army's preparedness to fight the next border war that inimical neighbours like Pakistan can be expected to thrust on India.

Prime Minister (PM) Manmohan Singh said during his address at the Combined Commander's Conference in October 2010 that as our economy grows and technological capabilities expand, we must "set higher standards" for defence modernisation and "be ahead of the technology curve." The PM's vision must be turned into reality by the bureaucracy in the MoD and the technocrats of DRDO and public sector defence production agencies working jointly with the armed forces and defence industry.