

# PREPAREDNESS RISKS MITIGATION - PRIORITIES FOR THE INDIAN AIR FORCE

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The recent India-China showdown in Ladakh has once again brought to focus, and also in public debate the preparedness of Indian armed forces to take on the aggressive and sometimes belligerent China<sup>1</sup>. China has had a fast growing economy for last three decades. The Communist Party dominated China<sup>2</sup> has had aspirations to be a world power. In the last two decades they have spent large sums on modernisation of the armed forces. India is a rising economic power with soon to have the largest population in the world. It is among the most threatened nations in the world. It has two nuclear neighbours with both of whom India has serious territorial disputes and has had full-scale wars.

China realised early that one who controls aerospace controls the planet. Airpower today is the dominant means of prosecuting war. It offers prompt multiple response options to the political leadership. Air and space give a vantage point to see wide area, allow connectivity, and allow large distance high speed weapon transit, and helps targeting. Today, Space greatly supports all warfare on earth. Weaponisation of space is also a reality. Aerospace offers speed, range, accuracy,

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- 1 Christopher W. Bishop, To Understand China's Aggressive Foreign Policy, Look at Its Domestic Politics, Council on Foreign Relations, October 8, 2020, <https://www.cfr.org/blog/understand-chinas-aggressive-foreign-policy-look-its-domestic-politics> 01 June.2021
  - 2 Srijan Shukla, "The Rise of the Xi Gang: Factional politics in the Chinese Communist Party," ORF Occasional Paper No. 300, Observer Research Foundation. February 2021. <https://www.orfonline.org/research/the-rise-of-the-xi-gang/> 01 June 2021

and lethality for achieving military effects. Air power and future of all warfare are intertwined. Air superiority, will still be a pre-requisite for all operations on the surface to succeed<sup>3</sup>. Even armies and navies are wanting to spend more and more on air assets.

### **Current State of IAF**

The Indian Air Force (IAF) is the fourth largest air force of the world. The primary mission is to secure Indian airspace and to conduct aerial warfare during armed conflict. Defence minister's operational directive of February 2009: "We should be prepared to fight on both fronts simultaneously a war at 30 days (intense) and 60 days (normal) rates."<sup>4</sup> The IAF has 32 fighter squadrons. These broadly include two of Rafale, 12 Su 30MKI, 5 MiG 21 Bison, three each of MiG 29 and Mirage 2000, 5 of Jaguar, and two of LCA. IAF's induction of Rafale fighters will enable it to maintain air superiority over China's J10, J11, and Su-27 fighter jets<sup>5</sup>. Armed with very long-range Meteor and MICA beyond visual range (BVR) air-to-air missiles, the Rafale fighters are expected to pose a significant threat to Chinese aerial assets. The Sukhoi Su-30MKI serves the IAF as the primary air superiority fighter with the capability to perform air-to-ground strike missions. With 11 C-17 and C-130 each, 17 IL-76, and over 100 upgraded An-32, IAF has significant cargo and troop lift capability. Similarly having inducted 15 Boeing Chinook heavy-lift and 22 Apache AH-64E attack helicopters, and with already a significant fleet of 240 Mi-17 series medium-lift helicopters and nearly 100 ALH variants and smaller Chetak/Cheetah fleets, IAF is in a good position

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3 Phillip S. Meilinger, Supremacy in the Skies, Air Force Magazine, February 2016, <https://www.airforcemag.com/PDF/MagazineArchive/Magazine%20Documents/2016/February%202016/0216supremacy.pdf> 01 June 2021.

4 Sushant Singh, The Challenge of a Two-Front War: India's China-Pakistan Dilemma, Stimson, April 19, 2021, <https://www.stimson.org/2021/the-challenge-of-a-two-front-war-indias-china-pakistan-dilemma/> 17 May 2021.

5 Ajay, India vs China: Airpower compared, Air Force Technology, July 31 2020, <https://www.airforce-technology.com/features/india-vs-china-indian-air-force-iaf-vs-peoples-liberation-army-air-force-plaaf/#:~:text=PLAAF%20is%20the%20second%20biggest,IAF%20is%20the%20fourth%20largest.&text=PLAAF%20has%20a%20long%20Drange,drones%20compared%20with%20the%20IAF.> 17 May 2021

for rotary wing assets. IAF has only three large AWACS aircraft and two indigenous DRDO developed AEW&C aircraft. Similarly IAF has only six IL-78 Flight Refuelling Aircraft (FRA). Both these fleets are highly inadequate for a continental size country like India which has also to cover the Indian Ocean Region.

India has a well-covered and integrated air defence radar cover. IAF continues to operate some of the legacy surface-to-air missile systems like the SAM-3 Pechora and SAM 8 OSA-AK. With the induction of a large number of indigenous Akash AD systems, and also, to arrive by November 2021, five S-400 systems<sup>6</sup> from Russia, the AD coverage will be significant. To cover the large Chinese border, more systems will need to be inducted. With induction of the MICA, Meteor, Astra, SCALP, BrahMos and Hammer, among others, IAF has a significant aerial weapons inventory.

### **Effects from the Air**

Air power is inherently strategic in nature and simultaneously provides conventional deterrence. Air Campaigns can be executed simultaneously against different spread out target systems. It can provide both kinetic and non-kinetic options with pin point accuracy. It can influence outcomes and actions of the surface forces. It can simultaneously produce physical as well as psychological effects. Strategic airlift allows strategic reach and strategic effects. IAF has repeatedly demonstrated it. IAF is technology intensive service and aerial systems have early obsolescence, and require greater investment in R&D and also funding. IAF is looking at reach from the Persian Gulf to the Straits of Malacca, using long range aircraft supported by FRA and AWACS. More of these are being acquired. IAF transformation is being driven from just being platform-based to being capability-based. Effects based, network centric operations are the new normal. Advantage of air power is ability to

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<sup>6</sup> Dinakar Peri, Delivery of S-400 missile systems to begin by November, The Hindu, April 13, 2021, <https://www.thehindu.com/news/national/delivery-of-s-400-missile-systems-to-begin-by-november/article34312445.ece> 02 June 2021.

exploit swing-role capabilities. When you say Rafale is an Omni Role fighter, means it can do many roles in a single mission. Intelligence, Surveillance and Reconnaissance (ISR) has become even more crucial for decision-superiority in net-centric warfare. Air power is best suited for it.

All countries are engaged in network-centric warfare<sup>7</sup>. Cyber and electronic warfare is where action is. Securing own networks and denying the same to adversary will be important. Air and Space platforms will greatly support cyber and electronic warfare operations much deeper into the enemy territory. There are dedicated aircraft for this purpose. The future is unmanned. Artificial Intelligence supported autonomous systems will fly independently or in conjunction with each other in a swarm or with manned aircraft as a team. This is one area India needs to invest more in. Unmanned systems are required for civil logistics and delivery, policing, and a variety of civil roles, but in military they will take on all the “Dull, Dirty and Dangerous Missions<sup>8</sup>”. Dull means boring long reconnaissance missions. Dirty means going into contaminated areas. Dangerous means entering much contested and well-defended areas.

### **Rapidly Growing PLAAF**

China’s People’s Liberation Army Air Force’s (PLAAF) mammoth fleet of fighter aircraft and advanced air defence systems poses an intimidating challenge to the IAF’s relatively smaller fleet size. PLAAF currently has nearly 2,000 fighter/bomber aircraft, with over 600 of 4<sup>th</sup> generation plus<sup>9</sup>.

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- 7 Lt Gen (Dr) R S Panwar, Network Centric Warfare: Origins And Main Characteristics, Future Wars, September 08, 2017, <https://futurewars.rspanwar.net/network-centric-warfare-origins-and-main-characteristics/> 03 June 2021
  - 8 Editorial Team, Drones Doing Dirty and Dangerous Jobs, Smithsonian National Air and Space Museum, Nov 28, 2017, <https://airandspace.si.edu/stories/editorial/drones-doing-dirty-and-dangerous-jobs> 03 June 2021
  - 9 Ajay, India vs China: Airpower compared, Air Force Technology, July 31 2020, <https://www.airforce-technology.com/features/india-vs-china-indian-air-force-iaf-vs-peoples-liberation-army-air-force-plaaf/#:~:text=PLAAF%20is%20the%20second%20biggest,IAF%20is%20the%20fourth%20largest.&text=PLAAF%20has%20a%20long%20Drange,drones%20compared%20with%20the%20IAF.> 01 June 2021

PLAAF has a long-range strategic bomber fleet and holds more strategic assets such as airborne warning and control system (AWACS) aircraft and combat drones compared with the IAF. PLAAF's operational fourth-generation fighters including J-10B/C, J-11B, J-16, and Su-30. PLAAF already has around 40 fifth-generation J-20 fighters, and targets to have 200 of these by 2027<sup>10</sup>. Meanwhile, the FC-31/J-31 remains under development. PLAAF has clear edge in having nearly 120 H-6 strategic bombers, with some variants able to carry up to six cruise missiles with 1500 km range. China also has much larger number of indigenous AEW&C aircraft and Flight Refuellers (FRA). China also has an edge with a huge surface-to-surface missile force. China's biggest strength is its indigenous aircraft industry that produces all types of aircraft and advanced helicopters. China has a huge Unmanned Aerial Vehicle (UAV) fleet of indigenous design. China also has significant Maritime air power, with PLA Navy (PLAN) having two operational aircraft carriers and nearly 600 aircraft. Two more carriers are under construction and two further, larger ones, on drawings boards. It can be seen that China has significant air power.

### **Pakistan Air Force (PAF)**

PAF has 19 squadrons with around 400 fighter aircraft, but many are awaiting replacements. In the long term, PAF will have around 300 JF-17s, 75 F-16s and will choose some other Chinese fighter, may be of J-10 class. PAF has a mid-sized transport aircraft and helicopter fleets. But they have acquired significant number of Chinese UAVs and will soon set up production of Wing Loong UAVs in Pakistan<sup>11</sup>. The PAF is primarily air defence orientated. While PAF in itself does not pose any significant threat to India, it has been exercising closely with PLAAF

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10 Editorial Team, China's J-20 fighter turns 10, The economic Times, January 19, 2021, <https://economictimes.indiatimes.com/news/defence/chinas-j-20-fighter-turns-ten/article-show/80328358.cms> 03 June 2021

11 Editorial Team, Wing Loong Unmanned Aerial Vehicle (UAV), Air Force Technology, <https://www.airforce-technology.com/projects/wing-loong-unmanned-aerial-vehicle-uav/> 03 June 2021

and has advantage of equipment interoperability. It could also allow the PLAAF to use some of its airfields. At the end of “Shaheen IX” joint PLAAF-PAF exercise in late 2020, PAF Air Chief Mujahid Anwar Khan said, “Evolving global security situation demands greater cooperation between Pakistan and China”<sup>12</sup>. IAF has to thus factor in a two front confrontation.

### **Targeted End State IAF**

“IAF will have 37-38 fighter squadrons in a decade”, said the Deputy Chief of IAF, Air Marshal Sandeep Singh at a webinar<sup>13</sup> in September 2020. This effectively meant 2030. The then IAF Chief Dhanoa had said in 2018 that “.... The force would get the authorised strength of 42 fighter squadrons by 2032”<sup>14</sup>. My personal assessment is that the IAF could reach 42 squadrons earliest by 2038. The end state could be 14 squadrons of Su-30 MKI, two each of Mirage 2000 and MiG 29, 12 squadrons of LCA variants, two of Rafale, six of the new fighter, and four of Advanced Medium Combat Aircraft (AMCA). This would make it 42. Effectively we would have stretched the Mirage and MiG 29 fleets. These figures are highly achievable as long as timely funds are allotted and there are no serious development delays in AMCA. IAF must also target to have 8 large and 10 smaller AWACS, at least 12 FRA aircraft. IAF must have by then a significant fleet of Unmanned Combat Aerial Vehicles (UCAV) systems, including the indigenously developed

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- 12 Economic Times, Evolving security situation demands greater Pak-China cooperation: Pakistan Air Force chief, December 24, 2020, [https://economictimes.indiatimes.com/news/defence/evolving-security-situation-demands-greater-pak-china-cooperation-pakistan-air-force-chief/articleshow/79942342.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/news/defence/evolving-security-situation-demands-greater-pak-china-cooperation-pakistan-air-force-chief/articleshow/79942342.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst) 2 June 2021
  - 13 Dinakar Peri, IAF will have 37-38 fighter squadrons in a decade, says deputy chief, The Hindu, October 01, 2020, <https://www.thehindu.com/news/national/iaf-will-have-37-38-fighter-squadrons-in-a-decade-says-deputy-chief/article32735076.ece> 01 June 2021
  - 14 The Economic Times, Indian Air Force capable of striking nuke, other targets in Pakistan: IAF Chief, July 14, 2018, [https://economictimes.indiatimes.com/news/defence/indian-air-force-capable-of-countering-china/articleshow/60954330.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/news/defence/indian-air-force-capable-of-countering-china/articleshow/60954330.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst) 01 June 2021
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DRDO's "Ghatak"<sup>15</sup>. IAF should also have a large inventory of aerial missiles with longer ranges including the later variants of BrahMos and Astra missiles.

### **Synergy at National Level**

India is in the process of evolving afresh its national doctrine based on ancient Indian thought. "Strength is power. And well-being is the goal" (Arthashastra, 6:2-31, 32)<sup>16</sup>. The political direction to the forces is very clear and have been given a free hand. Due to the multi-dimensional nature of conflict, increasing levels of synergy amongst the armed forces and civil agencies is operationally critical. IAF is going to be a key element in support of the surface, maritime and sub-surface wars.

### **Pakistan Centric to China Centric**

For long, India's military assets and infrastructure were Pakistan border centric. This is fast changing, for both infrastructure build up and assets position. While border roads and connectivity are being improved, IAF has upgraded its Advanced Landing Grounds (ALG) near China border<sup>17</sup>. All IAF airfields are getting hardened aircraft and equipment shelters. IAF now has significant number of Su-30 MKI squadrons facing China. Also the new acquisitions like Rafale, C-130 J, Chinook and Apache helicopters have all been located in the eastern sector. The same is also applicable to air defence systems and weapons positioning.

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15 EurAsian Times Desk, India's Most Secretive 'Stealth Drone' Project Uncovered; Aims To Counter Dassault, Boeing & Northrop UCAVs, EurAsian Times, October 12, 2020, <https://eurasiatimes.com/indias-most-secretive-stealth-drone-project-uncovered-as-it-aims-to-counter-dassault-boeing-northrop-ucavs/> 01 June 2021

16 Editor, A National Security Doctrine for India, Takshashila Institution, June 2019, <https://takshashila.org.in/a-national-security-doctrine-for-india/> 01 June 2021.

17 Editorial Team, Big boost to military infrastructure near China border! IAF opens another ALG in Arunachal, Financial Express, September 18, 2019, <https://www.financialexpress.com/defence/big-boost-to-military-infrastructure-near-china-border-iaf-opens-another-alg-in-arunachal/1709840/> 03 June 2021

## **Hindustan Aeronautics Projects**

Over the years, Hindustan Aeronautics Ltd (HAL) has produced under license a large variety of fixed and rotary wing aircraft. ADA developed LCA 'Tejas', and its in-house Advanced Light Helicopter (ALH) are the two major indigenous programs. Larger and more capable variants of these are being built. HAL also overhauls and upgrades of many aircraft and engines. HAL also has several multimillion-dollar contracts from leading international aerospace firms such as Airbus, Boeing, and Honeywell to manufacture aircraft parts and engines. From IAF point of view, priority has to be to complete design and development LCA Mk 1A, and mark up annual production initially to 16 aircraft. Tasks further down include developing the LCA Mk II and AMCA. HAL has been handed over an RFP for 70 HTT-40 basic trainer aircraft. HAL is also still working further on the long-delayed Intermediate Jet Trainer (IJT). The midsized, 80-90 seat, Indian Regional Jet (IRJ) has still to take off. Similarly, the Saras small transport (20 seats) is still struggling.

## **Projects DRDO**

Defence Research and Development Organisation (DRDO) has had its successful projects in the LCA, SU-30 MKI avionics, MiG-27 and Jaguar upgrades, UAVs, and EW suites of many aircraft. They are also making missiles and radar, and integrating the indigenous AEW&C 'Netra' on the Embraer platform and will be responsible for the development of the AMCA. DRDO also runs the Integrated Guided Missile Development Program, which includes the successful Akash air defence system and Astra air-to-air missiles, and Nirbhay missiles. BrahMos missile is through Indo-Russian joint venture evolved by DRDO. DRDO has plans for Long and medium-range SAMs. LRDE has had successes in the development of radars like the INDRA, Rajendra fire control radar for the Akash missile system, the Central Acquisition Radar (CAR), LRTR a 3D AESA with help of Elta of Israel, and the 2D Low-Level Lightweight Radar (LLLR). It is also developing the Uttam AESA for LCA Mk II, and



S-Band AESA array for the DRDO's AEW&C. ADE made the Lakshya aerial target, some flight simulators, and a few avionics for Tejas LCA. GTRE's flagship program was the GTX Kaveri engine intended to power the HAL Tejas which ran into failure for many reasons. The program was abandoned in 2014. Meanwhile, a 52-kilonewton dry variant of the Kaveri engine is planned to be used in the DRDO UCAV. Defence Avionics Research Establishment (DARE) is in the areas of airborne electronic warfare, airborne processors, and mission avionics. DRDO is also involved in Artificial Intelligence (AI) research.

### **Atmanirbharta the Only Answer**

The Make-in-India, Atmanirbharta, in defence is being aggressively pushed at the highest levels. Defence imports not only take away large chunks of foreign exchange but also perennially put the nation at the mercy of foreign powers. India currently also has the dubious reputation of being one of the largest importers of defence equipment. To promote indigenous design, development, and production many measures have been initiated. Defence Acquisition Procedure DAP-2020 is a greatly evolved document. Clearly, the thrust is to promote 'Made-by-India' as a first choice. 'Make-in-India' is being driven as an interim solution. Big private industrial houses like Tatas, L&T, Reliance, Mahindras, Adani, Bharat Forge and many others have come into defence manufacturing in a serious way. The government's thrust is to increase the share of all manufacturing from the current level of 15 per cent of Gross Domestic Product (GDP) to 25 per cent. The defence will be a significant area. India's target is to reduce defence imports to initially 40 percent from nearly 70 percent<sup>18</sup>.

Adding to the existing list of 101 defence items banned for import, the Ministry of Defence has released a list of 108 more items to be added to the negative import list to give further impetus to self-reliant defence

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18 Editorial Team, Arms race: India approves defence procurements worth \$3.5 bn, says report, The Tribune, July 19,2014, <https://tribune.com.pk/story/738177/arms-race-india-approves-defence-procurements-worth-3-5-bn-says-report> 02 June 2021

manufacturing<sup>19</sup>. The list also comprises of many complex systems, sensors, simulator, weapons and ammunitions related to the IAF like Helicopters, Air Borne Early Warning and Control (AEW&C) systems, Medium Power Radar for Mountains, MRSAM Weapon Systems, among many others.

Government formulated the 'Defence Production and Export Promotion Policy 2020' to provide impetus to self-reliance in defence manufacturing under the 'Aatmanirbhar Bharat' scheme. The ministry aims to achieve a turnover of Rs. 1 lakh 75 thousand crore (US\$ 25 billion), including an export of Rs. 35 thousand crore (US\$ 5 billion) in the aerospace and defence goods and services by 2025<sup>20</sup>.

India has finally come of age with the LCA program. We are building good helicopters. We have a great space and missile program. We need to increase production, and also hasten development of Mk1A and Mk2. The fifth Generation Advanced Medium Combat Aircraft (AMCA) must succeed for India to come into big league. India must accelerate development of its own mid-size transport aircraft and airliner. We need to convert pure research into products that can be physically inducted in the armed forces.

### **Private Sector in Defence**

India has a great industrial base and significant defence equipment demand to allow advantage of scale. If India can succeed in its missile, space and nuclear programs, it can do the same in defence production. Privatization of DPSUs has been spoken for long. Embraer of Brazil is a successful model to emulate. Of India's defence market, roughly 70% has been through imports, 25% with the Defence PSUs and the

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19 Abhishek Bhalla, Mini UAVs, mine-protected vehicles among new list of 108 defence items banned for import, India Today, May 31, 2021, <https://www.indiatoday.in/india/story/mini-uavs-mine-protected-vehicles-among-new-list-of-108-defence-items-banned-for-import-full-list-1809194-2021-05-31> 01 June 2021.

20 Indian Brand Equity Foundation, June 02, 2021 <https://www.ibef.org/industry/defence-manufacturing.aspx> 02 June 2021

remaining 5% with private partners. This will change soon. BrahMos tactical cruise missile is a successful JV with Russia and ready for export. India has great success in ship-building both through public and private sector shipyards. Among the airborne systems projects, And Tata Power is handling the modernization of airfield infrastructure for IAF. Tata Aerospace and Defence (Tata A&D) have been making the AH-64 Apache combat helicopter fuselage. They are also making aero-structures for Boeing's CH-47 Chinook helicopters. All C-130Js delivered to customers around the world have major aero-structure components from India. Sikorsky, a Lockheed Martin company, also relies on Tata Advanced Systems (TASL) in Hyderabad, India, as the manufacturing base for its global supply of cabin aero-structures for the S-92 helicopter. Lockheed Martin Aero-structures (TLMAL), is a joint venture with TASL and Lockheed Martin, producing 24 C-130 empennages annually. Tata group is working with GE to manufacture CFM International LEAP engine components in India. Lockheed Martin selected TASL to produce F-16 wings in India. EADS unit Cassidian plans to make India a hub for a large number of defence products that are locally manufactured and also offer technological value. GE has a huge India presence. There is also a large MRO market that can create an R&D base for engineering services. Adani-Elbit JV will make Hermes 900 UAVs in India.

In 2012, Centum Group, a Bangalore-based defence electronics company was selected to supply to French defence solutions provider Thales. It is now cleared to supply directly to any of the 70-plus Thales sub-groups. Tata Power Strategic Engineering Division (SED) has secured orders for the Akash Air Force Launcher for the Indian Air Force. Mahindra Group bagged a large aero-components production contract to manufacture a variety of metallic components for several Airbus aircraft. Bharat Forge is a major player in the artillery and specialized vehicles segment. Several small companies – such as Dynamatic Technologies, Avasarala Technologies, DefSys, Ravilla, and Taneja Aerospace – have of late acquired advanced technological capabilities.

Dynamatic Technologies makes assemblies of vertical fins for Sukhoi 30 MKI fighters. Samtel electronics makes SU-30 Head-Up Displays and other electronics. Indian companies have the global opportunity not only due to cheaper skilled labour but have also developed the ability to manufacture accurately to specifications, particularly in aerospace, metalworking, and electronics.

An estimated 24,000 MSMEs currently involved in defence supply chain, and the contribution of private players in the defence sector has steadily grown over the years with more than 460 licenses issued so far to private companies. Over the next 7-8 years, India's defence modernisation plan is projected at \$130 billion and contracts worth over \$55.17 billion are expected to be placed with domestic manufacturers, as per Engineering Exports Promotion Council (EEPC) India<sup>21</sup>.

### **Technologies India Must Master**

India needs to identify new game-changer technologies and start investing, lest be get left behind. These include cyber and electronic warfare, artificial intelligence, unmanned systems, hypersonic, among others. Hypersonic flight and weapons will be difficult to engage. They will act as force multipliers against high-value targets. There is a lot of action in Directed Energy Weapons. Lasers that can burn incoming missile electronics or dazzle electro-optical sensors. For India to become significant, it must also master aircraft engine, and AESA radar technologies. Many of our successes are from joint venture route. Sixth Generation fighter technologies are evolving. Stealth will remain a feature. Very long range weapons would mean air combat shifts farther apart. Ranges of around 400 kilometres for air-to-air missiles are already a reality. Air launched cruise missile ranges are going up and are a vital technology.

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21 Editorial Bureau, Over 460 licences issued for private players in defence production, The Hindu Business Line, March 23, 2021, <https://www.thehindubusinessline.com/companies/msme/over-460-licences-issued-for-private-players-in-defence-production/article34142204.ece> 03 June 2021

## **Imperatives for IAF**

Clearly IAF will have been sturdily growing in capability. It must get back to the authorized force levels of 42 squadrons. Some often suggest that since Rafale and Su-30 MKI can achieve much greater effects than the older MiG 21s, why IAF should continue to seek 42 squadrons. The argument is flawed. India's adversaries are already having fifth generation fighters. They are not cutting down numbers. Type of aircraft and weapon platforms must be comparable to the adversary. India must have them too. IAF also urgently needs additional AEW&C and FRA. The future being unmanned, IAF needs to invest more into combat UAVs. India has also to defend itself against a possible sizeable Chinese surface-to-surface missile (SSM) attack. We need more air defence SAM systems of the S 400<sup>22</sup> and Iron Dome<sup>23</sup> class, and the many indigenous air defence systems India is working on, including some in JVs with Israel. It is important to have a larger ammunition and missiles stocking. SSMs and Cruise missiles are going to be important. India has a good missile program. The Prithvi, Agni, BrahMos, Akash and Astra missiles are a success, and newer variants must be hastened. Electronic and cyber warfare capability is going to be important. More needs to be done on this score.

## **Way Ahead**

India has threat from two-fronts has been acknowledged by the government and has been repeatedly stated by the Chief of Defence Staff (CDS) General Rawat<sup>24</sup>. India is surely factoring in such a scenario.

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22 Huma Siddiqui, India to get world's best Air Defence System S-400 from Russia, Financial Express, April 16, 2021, <https://www.financialexpress.com/defence/india-to-get-worlds-best-air-defence-system-s-400-from-russia-check-details/2234332/> 02 June 2021

23 Krishn Kaushik, Explained: How Israel's Iron Dome air defence system intercepts rockets, Indian Express, May 25, 2021, <https://indianexpress.com/article/explained/explained-how-israels-iron-dome-intercepts-rockets-7312743/> 02 June 2021

24 Krishn Kaushik, Army, IAF chiefs visit forward areas, CDS Rawat warns of two-front threat, The Indian Express, September 4, 2020 <https://indianexpress.com/article/india/india-china-border-dispute-cds-bipin-rawat-naravane-6582279/> 01 June 2021

But currently there is a backlog of modernisation of all three services. In particular for the IAF, the obsolescence sets in much faster for aerial systems. The gap with China is continuing to increase. India certainly needs to increase its defence allocations, from current 2.15 percent<sup>25</sup> of GDP to around 2.5 percent. IAF is well trained and operationally well exposed. IAF has clear advantage in terms of more and better located and equipped airfields than China. IAF can well match the PLAAF, but once the numbers increase, IAF will be much better placed. Time to act is now.

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25 Abhishek Bhalla, India's defence spending in terms of total govt expenditure for 2021-22 lowest in six years, India Today, March 17, 2021, <https://www.indiatoday.in/india/story/india-s-defence-spending-in-terms-of-total-govt-expenditure-for-2021-22-lowest-in-six-years-1780407-2021-03-17>