DEFENCE BUDGET

MAKE IN INDIA

BUDGET 2024

We endeavour to sound ALERTS and create AWARENESS about the myriad dimensions and manifestations of DEFENCE and SECURITY in India and around the world.

The power of a King lies in his mighty arms...

Security of the citizens at peace time is very important because State is the only saviour of the men and women who get affected only because of the negligence of the State.

- Chanakya

DSA IS AS MUCH YOURS, AS IT IS OURS!

India's budgeting exercise is a complex process involving a myriad of departments and ministries, spreading across a spectrum that includes archaeology and space. There could be any number of other sundry recipients in between, but none generates the annual inquisitiveness as does the budget of the Ministry of Defence. From the budget delivery speech which invariably declares that this is the best that has ever been done for the country, and then the squibbing commentaries which will inevitably slam the allocations as insufficient and improper. There will also be the political comments which dissect the budgetary allocations subjectively.

Being partisan is an essential part of the political process, and the defence budget is its annual competitive moment. Which essentially means that the statements emanating from both sides of the political spectrum will be designed to suit the partisan positions that are adopted owing to the nature of Indian politics. Bipartisanship is rare, and rarer even in matters of national security. So slamming budgetary allocations is par for the course, even if the amounts announced are adequate and impressive. And when they are insufficient, as they tend to be in periods of economic stress, then its free for all.

This free for all doesn't do justice to the intense dynamics behind the preparation of India's defence budget. Even as the various departments lobby for an enhanced share of the budget pie, the defence ministry has an even more complex process, for it involves the three services with their varied visions for modernisation and threat perceptions. After all, any capital acquisition has to be based on a thorough analysis of what constitutes India's current national security scenario, and what will be the looming medium and long term threats. These studies should form the bedrock of India's allocations for national security.

The defence budget allocations should, therefore, not be an exercise that exists in isolation from the larger security environment which involves the entire gamut of players in India. Given the example set by the breakdown in Manipur it is easy to say that the players involved in India's security set up range from the local state police forces all the way up to North and South Block in New Delhi. The allocations, therefore, should keep in mind the complexities as thrown up by the various analyses that emanate from the threat perception scenarios these institutions produce. But they must.

Which then becomes a crucial point to note that each institution must periodically generate threat perception scenarios that form a readable report which can then be studied as part of a larger process. It is that larger process which should then be responsible for producing India's defence budget, not an isolated departmental or institutional lobbying effort. The current process involves months of to and fro between the three services, financial section in MoD, and Finance Ministry. The services invariably ask for the maximum, which gets whittled down by civilian pens, as a result none are satisfied by the allocations, annually.

Manvendra Singh

DEFENCE BUDGET:
INDIA'S WAY FORWARD FROM 2024

T he Defence Budget, recently approved in Parliament, outlines the financial allocations for the defence sector in the upcoming fiscal year. It has generated discussions both within and outside the defence community. The budget encompasses a wide range of provisions for the defence apparatus and its unique features have garnered attention. This year the Defence Budget is quite distinct in terms of the gamut covered by the government as following:

1. **Deep Tech Focus:** A new scheme is introduced to boost deep tech capabilities in the defense sector, signaling a commitment to technological advancements for national security.

2. **Modest Increase:** The Defence Budget sees a moderate rise, allocating Rs 6.2 lakh crores to cover salaries, weapons procurement, and pensions for the armed forces.

3. **Promotion of Atma Nirbharta:** The government aims to expedite self-reliance in defence by encouraging public and private investment in post-harvesting agriculture activities.

Amidst geopolitical tensions worldwide and India's strategic imperatives, the Russian invasion of Ukraine in 2022 has prompted a re-evaluation of military planning and budgeting. The Defence sector, facing heightened border tensions with China and Pakistan, underscores the urgency for prioritising modernisation and self-reliance in arms production, aligning with the 'Make in India' initiative.

The Defence Budget's historical allocation, though falling short of the recommended benchmark of 3% of GDP, is expected to witness minor adjustments in the upcoming fiscal year. Existing procurement plans, including significant initiatives like the second indigenous aircraft carrier and the acquisition of Tejas Mark-1A aircraft, are likely to continue.

Despite rhetoric on Atma Nirbharta (self-reliance) and 'Make in India,' the reality includes a mix of domestic production and imports. The Defence Budget must navigate this complexity, addressing real and growing threats from China and Pakistan, both geopolitically and conventionally. China's infrastructure advancements near border areas heights concerns. Technological gaps, especially in areas such as hypersonic missiles, UAVs, and electromagnetic weapons, need attention. The imperative for swarm drone combat capability, futuristic drones, and e-warfare systems is highlighted, with a call for urgent developments in Future Infantry Combat Vehicles (FICVs).

In the dynamic landscape of global geopolitics, the symbiotic relationship between military strategies and economic interests necessitates a nuanced adaptation of the Defence Budget. As nations increasingly intertwine their military prowess with economic imperatives, the Defence Budget becomes a critical instrument for ensuring not only security but also strategic agility.

The latest this edition meticulously delves into vital aspects, unravelling the multifaceted challenges and opportunities that shape India's defence position in the intricate global theatre. It offers an in-depth exploration beyond the surface, providing readers with a comprehensive understanding of the intricacies influencing India's defence and security priorities in 2024.

In this edition, the DSA champions crucial initiatives to fortify India's defence landscape. Firstly, it emphasises the imperative of integrating defence education, urging for its inclusion from middle-level schools to establish a solid foundation in understanding defence-related matters. Additionally, it proposes the implementation of a Defence Awareness Program, designed to bridge the gap between the armed forces and the general populace, fostering increased understanding and support. Furthermore, it advocates for special budgetary provisions tailored to address the unique needs and challenges of female defence personnel, promoting gender inclusivity and recognizing their indispensable contributions within the defence sector. These three initiatives collectively aim to bolster the nation's defence preparedness, knowledge dissemination, and inclusivity in the evolving landscape of 2024.

I am sure that this edition will very well address on the importance of Defence Budget and its effective implications for the National Security of Bharat in the coming weeks and months ahead.

JAI HIND!

Pawan Agrawal
Chief Executive Officer

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DEFENCE BUDGET AND GEOPOLITICAL ANALYSIS:
A CLOSER LOOK AT INDIA'S ALLOCATION

This article explores the evolution of India's defence budget since 1950, emphasising its crucial role in national security. Examining trends in allocations for research, salaries, and pensions, the narrative reflects on the adequacy of resources in light of changing global geopolitics.

"**T**HE NATIONAL DEFENCE IS ONE OF THE CARDINAL DUTIES OF A STATESMAN"

"I am sure, the House will agree that considering the size of defence expenditure, which accounts for about half the revenue of the central government , it is of the utmost importance that all avenues for effective economy should be explored without affecting the efficiency of the services."

These were the sayings of RK. Shanmukhan Chetty when he introduced India's first budget for the financial year 1950-51, and after that there is no looking back. Our leaders back then knew that how important it is to account revenue and expenditure for each sector and this is termed as budgeting or budget document.

India's first Finance Minister, RK Shanmukham Chetty, was an unlikely man for the job. On 26 November 1947, Chetty tabled India's first budget in the Parliament.

ARPITA SHARMA

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In today's 21st century, for the development of any country a carefully accounted and well documented budget for next financial year is crucial and especially in the defence sector. A defence budget or military budget is the portion of the overall budget of the Union of India that is allocated for the funding of the Indian Armed Forces. In 1950 it was just Rs 168 crores and in the past decade it has increased tremendously from Rs 99708 crore to Rs 593537.64 crore.

Detailed Analysis

Each year, for any government the most important step is to allocate a decent amount of money to the defence side. Now, the defence budget not only consists of the country's expenditure in buying different weapons or pension and salaries to different defence officials but also it includes an important region of research and development (R and D) section, this capital is provided to various institutions like DRDO. Talking about the last ten years the budget of the Ministry of Defence has grown at a steady rate of 9 percent.

On February 1, Finance Minister Niramala Sitharaman will present the last Budget of the Modi 2.0 government as India will hold the Lok Sabha election in April-May.

Indian currency.

Considering the current government, and comparing 2015 with the current financial year of 2023, the humongous gap in overall budget is evident.

Back in 2014, when the first full-fledged budget of the Modi government was introduced in the parliament in July, 2014, it set around Rs 224000 crores for defence purposes which was approximately 10 percent increase over the previous years. With the passage of time, the budget has seen a gradual growth with regard to collective defence requirements. Before covid 19 hit the country defence sector was allocated Rs 431011 crores for expenditure and various research and development arenas of the sector. This budget has seen whooping growth and forms approx. 16 percent of central government budget, similarly the story goes on and in current fiscal financial year defence has Rs 5.94 lakh crore of investment in its hand

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which is highest in any sector. So, where does the problem lie? How much money is enough for this sector? Are we doing enough for this sector?

The problem is not as simple as it seems, the real stone lies in the estimation of the allocation of the defence budget with the country's

GDP. For instance, the defence budget of 2019-2020 financial year makes only 2 percent of India's then GDP. Thus, only a meagre amount of a country's GDP is allocated for the security of a country. And this problem was primarily discussed during India's first national defence budget as stated earlier. Then defence minister Baldev Singh

Raksha Mantri launched Innovations for Defence Excellence (iDEX) Prime and sixth Defence India Start-up Challenge (DISC 6) during DefConnect 2.0 in New Delhi.

Chokkar already asked for a greater percentage of allocation for defence as defence is the chief sector for any developing country, it is the only arena that can provide or fulfil any region's military capabilities in all naval, land and aerospace domains. It is not only the strategically important sector but a geopolitically dominant sector.

If we see Scientific breakdown of these three focal years of defence budget or the budget allocation to the DRDO (research in order to increase overall sand development), it is clearly seen that the allocation was Rs 11960 crore (5 percent of the total defence budget, that is Rs 118231 crore) in 2014 which was steadily increased before covid period that is fiscal year 2019-2020,

it became humongous Rs 19021.02 crore. Presently, in 2023 in order to increase overall development in defence related science areas the allocation has been enhanced by 9 percent with a total of Rs 23264 crore. Not only this but to foster young minds and to create startup business and scientific innovation in defence field allocation is also made to IDEX and DTIS.

In today's world, research and development act as a backbone for any emerging country as R and D wing empower any country with exclusive cutting-edge technologies, superior and out of the box innovation which further help a country during critical situations, not only this wing helps the armed forces with state-of-the-art weapon

and artillery system but also boost the morale of our soldiers and meet their need in this technologically oriented world. Both developed as well as emerging countries make sure to pave the way for their r and d wing by providing hefty allocation to this sector.

Lastly, the defence budget comprises the money allocated to pension and salaries of various armed officials. From the past 10 years, this money has also seen a clear-cut increase, with different pension schemes and increased inflation after covid years, the huge difference could be easily explained. In the 2019 -2020 budget, out of the total budget allocated to defence sector an amount of Rs 112079.57 crore has been reserved for pension of various officials.

A line of the Indian Army version of Mine Protected Vehicles (MPV) during a flagging off ceremony at Ordnance Factory in Medak District some 60kms from Hyderabad.

both in terms of size as well as spending or allocation to this sector. This sector consists of all the regular activities, war spending (a major chunk of US military spending goes to other countries' war spending) and other pentagon related spending. Thus, all of this cost the US approx. 877 billion us dollars, which is about 40 percent of the total spending worldwide which ultimately leads to 3.5 percent of its GDP.

On the other hand, if we talk about India's current ratio of spending to defence and GDP it is around 2.47 percent.

However, in the fiscal year 2022-2023 when India's defence budget has increased by 12.95 percent, pension has also seen a drastic turn of about Rs 1.38 crore and salaries of personnel and civilians amount to Rs 1.54 crore.

Indian army holds the 4th position worldwide, in terms of tactics, strength, military power, weapons and warfare skills, India has proven its way in all of these areas. With this new age world of globalisation and militarisation, it is important for us to move with bravery and set our standards high. And for this it is equally important to know how different countries are contributing to their security and where do we stand in the list? It is also equally important to analyse how to increase this allocation with regard to our GDP. Time has come to not only maintain the valour of our defence sector but also to strengthen its roots.

Geopolitical Analysis Of Various Defence Budgets

1. The United States of America is the world number one military

We should **never forget** that our **armed forces** exist to ensure **safety** for **our nation,** so that each one of us can **sleep soundly at night.**

India's defence budget breakdown.
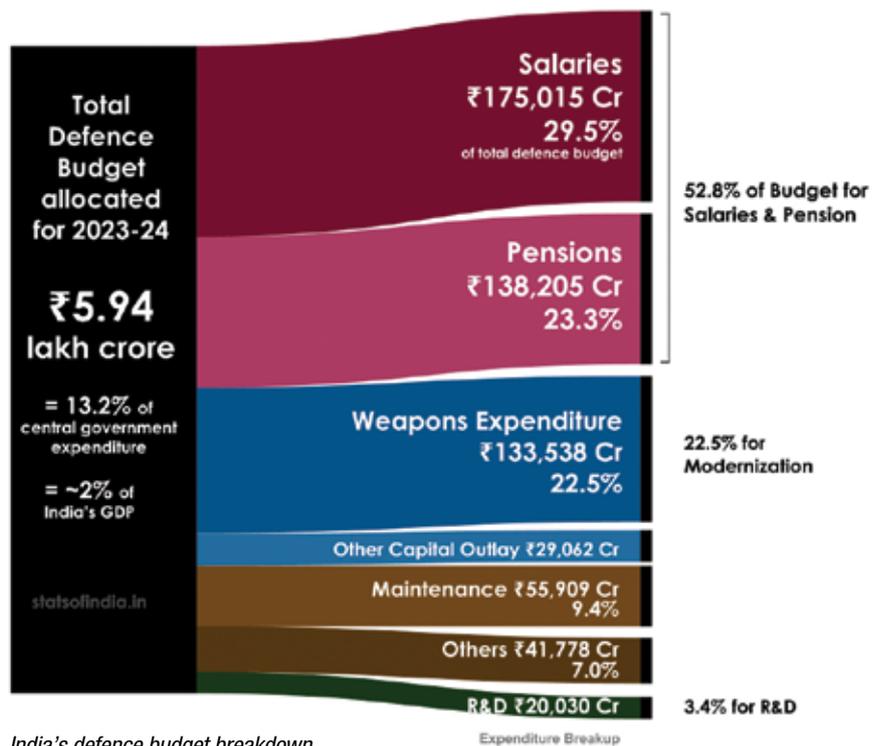
2. China comes just after the US in its defence budget allocation terms, it contributes 292 US billion dollars which is approx. 1/3 that is allocated in the US. Here, the catch is each year China makes sure to allocate an exclusive and hefty amount to its defence science and space sector which ultimately make sure to fulfil its growing needs for advanced defence equipment.

3. Thirdly, after the engagement in war with Ukraine, both the countries have drastically increased their budget allocation system and started contributing a lofty amount of the country's GDP in this region. Russia's official budget is 86.4 US billion dollars, having tremendously increased about 31 percent from previous years.

4. Not only this but in order to attain full war tactics Ukraine has also increased its allocation and soon became number one country in the world with high GDP to defence ratio, it allocates about 33 percent of the country's GDP in defence field.

With all this data in our hand it clearly shows that how each country spends their budget on the military, thus as the world's 4th largest military power , we must observe the new trends in both the geopolitical and military world outside us. Time has changed, each day comes up with new tension in different regions. In today's world each centre of the continent is facing some or the other war-like situations, whether it is Russia-Ukraine, Armenia-Azerbaijan, Israel-Hamas or the upcoming speculative tensions between China and Taiwan. India

needs to be ready for all these upcoming events with clarity and new advancements.

The Indian military has proved itself from time to time, in every war like situation not only against India but also against its friendly countries. The government has already increased and is continuously increasing the defence sector budget but it's high time now that the government should fix a definite benchmark as the percentage of the GDP for defence purpose or expenditure in order to attain a global security scenario. It is also important to increase time and allocation of ample resources in the R and D department as this will ensure security with modernity.

We should never forget that our armed forces exist to ensure safety for our nation, so that each one of us can sleep soundly at night. DSA

NAVIGATING PERSONNEL COSTS AND CAPITAL EXPENDITURE IN THE INDIAN DEFENCE BUDGET

A year ago, in an article for the DSA magazine, Rakshith Shetty conducted a thorough analysis of the defence pension systems in India and the United States. This inquiry led to the identification of four crucial insights extracted from the intricate framework of the U.S. defence pension system. In the present discussion, he pivots towards a deeper exploration, shedding light on the challenges hindering the modernisation efforts of the Indian Armed Forces.

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> **India faces challenges** in modernising its **armed forces** and bolstering its **domestic defence-industrial** base due to the constraints imposed by **personnel** and **pensions costs.**

Today's discussion pivots towards a deeper exploration, shedding light on the challenges hindering the modernisation efforts of the Indian Armed Forces.

India faces challenges in modernising its armed forces and bolstering its domestic defence-industrial base due to the constraints imposed by personnel and pensions costs. Despite rising security challenges, investments and research funding are adversely affected. Nevertheless, ongoing efforts hold promise in alleviating the burden of pension and personnel

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costs. The significant context is India's defence budget for 2023, amounting to INR 5.94 trillion (USD 73.8 billion), making it the world's third-largest after the United States and China. However, a substantial 53% of this budget is allocated to personnel and pensions, limiting the resources available for defence procurement and

modernisation.

Adding to the complexity, India's armed forces encounter additional difficulties in maintaining their Russian-origin defence equipment amid Russia's involvement in the Ukraine war. Simultaneously, India grapples with the challenges posed by an assertive China and

ongoing tensions with Pakistan. Moreover, Delhi is actively pursuing a modernisation agenda, seeking to reduce dependence on Russia, diversify its international supplier network, and emphasise domestic arms production and research and development through the 'Make in India' initiative.

Prioritising Defence: A Focus on Public Expenditure

From 2013 onwards, India's defence budget has witnessed a substantial increase, more than doubling in size (refer to the table). Yet, a closer analysis reveals internal strains on domestic defence spending. During this timeframe, a noticeable decrease is evident when considering the defence budget as a percentage of India's GDP or as a proportion of the total central-government expenditure.

Relying solely on the proportion of GDP as a metric can be deceptive due to fluctuations in economic

Proposed budget allocation to Indian Ministry of Defence (MoD) as a % of GDP and total central government expenditure				
Year	Proposed Defence Budget (INR tr)	Total Central Government Expenditure (INR tr)	Proposed Defence Budget as % of GDP	Proposed Defence Budget as % of Total Central Government Expenditure
2023	5.94	45.0	1.93	13.2
2022	5.25	39.4	1.92	13.3
2021	4.78	34.8	2.02	13.7
2020	4.71	30.4	2.38	15.5
2019	4.31	27.9	2.15	15.5
2018	4.04	24.4	2.14	16.6
2017	3.60	21.5	2.11	16.8
2016	3.41	19.8	2.21	17.2
2015	3.10	17.8	2.25	17.4
2014	2.85	17.9	2.29	15.9
2013	2.53	16.7	2.26	15.2

Source: IISS Military Balance+ database; Government of India Union Budgets 2013-2023   ©IISS

growth, particularly evident in the 6.6% contraction experienced in 2020 amid the COVID-19 pandemic. A more reliable measure, arguably, involves assessing the share of defence spending within the central-government expenditure, providing a more direct reflection of government priorities. Over the period from 2013 to 2023, central-government expenditure witnessed a substantial growth of 170%. However, since the inception of the Narendra Modi government's first full-year union budget in 2015, there has been a decline of 4.2 percentage points in the share allocated to defence spending, as outlined in the accompanying table.

Navigating the Tension Between Pensions Burden and Capital Spending

In 2023, military pension funding reached INR 1.4 trillion (USD 17.2 billion), comprising 23.3% of the total defence expenditure. This represents a substantial increase from 2008, when it constituted 12.6% of the overall budget, consistently surpassing the 20% mark since 2016. Additionally, India consistently allocates 30% of the defence budget to military pay and allowances. In 2023, this allocation totalled an estimated INR 1.8 trillion (USD 21.9 billion), constituting 29.6% and collectively surpassing half of the entire defence budget. The substantial rise in the overall defence budget obscures its actual implications for procurement and research and development (R&D) spending. As defence funding shows a relative decrease against GDP and central-government expenditure, coupled with the constraints imposed by personnel and pensions costs on investment within the defence budget, the

modernisation endeavours are further hampered. The added challenges of bureaucratic hurdles and sluggish procurement processes act as impediments, collectively acting as a brake on the pace of modernisation efforts.

Indian policymakers recognize the imperative to revitalise the nation's armed forces. Notably, capital expenditure constituted an average of 32.4% of the total defence budget in proposed budgets from 2008 to 2012. However, this allocation dwindled to an estimated average of 27.0% from 2013 to 2017 and further diminished to 23.4% between 2018 and 2022. Similarly, research and development (R&D) experienced a decline from an average of 5.1% to 4.5% to 4.3% across the same periods. In the 2023–24 budget, there is a noteworthy uptick, with capital and R&D expenditure

Agnipath scheme, Union Defence Minister Rajnath Singh announced that the government will reserve 10 per cent jobs in the Defence Ministry for Agniveers.

accounting for 29.1% of the total budget. Specifically, funding for new arms and equipment acquisition, aimed at modernisation and replacing obsolete weapons, stands at USD 16.2 billion, representing 21.9% of the budget.

A Strategic Approach to Personnel Reform

The substantial personnel costs persistently lead to the army dominating the budget allocation among the three services. Inclusive of pension expenses, the 2023 defence budget earmarked USD 42.2 billion or 57.1% of the overall budget for the army, with a mere USD 3.7 billion designated for modernisation efforts. In contrast, the navy received USD 11.4 billion or 15.5% of the budget, allocating USD 5.9 billion for modernisation,

> Over the period from **2013 to 2023, central-government expenditure** witnessed a substantial **growth of 170%.**

while the air force was allocated USD 14.1 billion or 19.1% of the budget, with USD 6.6 billion earmarked for modernisation initiatives.

India is exploring innovative approaches to recruitment and retention, with a long-term aim of alleviating the pension burden. In June 2022, it introduced the Agnipath ('fire path') program, officially designed to lower the

average age of the army. This initiative holds significant budgetary implications, intending to enlist younger soldiers (ages 17.5 to 21) under a four-year contract. After this initial period, a quarter of recruits will have the opportunity to continue their service as a career in the armed forces. Agnipath replaces the previous requirement of a minimum 17-year tenure with four years as an 'Agniveer' and 15 years' service for those successfully

transitioning to regular soldiers. The remaining three-quarters of Agniveers, who do not pursue a career in the armed forces, will receive a tax-free severance package but will not be eligible for pensions or health benefits.

Agnipath, embedded within the broader personnel reform initiative, along with the envisioned establishment of a Defence Modernisation Fund (DMF) to complement annual budgetary allocations, represents crucial initial strides toward rebalancing defence spending in favor of modernisation objectives. However, achieving this shift necessitates increased investment in procurement and research and development (R&D), contingent upon the overall performance of the country's broader economy.

Weighing India Against China and Pakistan

The persistent military standoff in eastern Ladakh has rekindled apprehensions of a potential two-front war for India. While historical instances suggest China's non-direct intervention in Pakistan's conflicts with India, current geopolitical dynamics, marked by China's burgeoning economic, security, and strategic interests in Pakistan, raise the spectre of possible interference in any India-Pakistan conflict. Conversely, given Pakistan's ideological hostilities toward India, it is inclined to exploit any conflict involving India and China. The pertinent question revolves around whether India's defence spending adequately accounts for such complex eventualities.

As of 2020, the collective military expenditure of Pakistan and China stands at USD 263 billion, a formidable 3.6 times greater than India's defence spending. Notably, China individually outpaces India by a significant margin of USD 180 billion (USD 252 billion versus USD 72 billion). Beyond the sheer financial metrics, the combat

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Indian soldiers stand on a snow-covered road near Zojila mountain pass that connects Srinagar to Ladakh, bordering China.

potential of China's military spending potentially surpasses the budgetary figures. Unlike India, which allocates approximately 60 per cent of its defence budget to personnel costs, China expands less than a third, enabling a substantial portion of its more extensive budget for strategic modernisation efforts.

The asymmetry in military spending between India and China is evident, and it is acknowledged that India may not match China's spending capacity in the foreseeable future. However, a strategic approach focused on technology-driven modernisation could serve as a deterrent against Chinese hegemony. To realise this vision, Indian defence planners must progressively shift away from the historically predominant trend of personnel-centric growth in defence allocations. By prioritising technological advancements, India can enhance its defence capabilities and address the evolving challenges posed by the intricate dynamics of the region.

In conclusion, the landscape of India's defence budget reflects a delicate equilibrium between personnel costs and capital expenditure, a balance crucial for the modernisation aspirations of the armed forces. As we traverse the intricacies of budget allocations, it becomes evident that the challenge lies not just in the absolute figures but in the strategic choices made to propel the nation's defence capabilities forward. The Agnipath program and the proposed Defence Modernisation Fund signify a proactive approach to address the persistent dominance of personnel costs, heralding a potential shift toward a more agile and modernised armed forces. However, these initiatives stand at the crossroads of implementation, contingent upon the broader economic performance and the efficiency of bureaucratic processes.

> As **India charts** its course in the **realm of defence,** the imperative is clear — a **judicious recalibration** of **budgetary priorities** is essential to ensure a dynamic and **resilient armed force.**

As India charts its course in the realm of defence, the imperative is clear — a judicious recalibration of budgetary priorities is essential to ensure a dynamic and resilient armed force. The journey ahead involves not only strategic reforms but also a commitment to sustained investment in research, development, and procurement. Through these concerted efforts, India can navigate the tension between pensions burden and capital spending, forging a path toward a modernised, self-reliant, and strategically agile defence apparatus. **DSA**

TRAVERSING THE QUESTION OF 'INDIGENISATION' CHALLENGES OF
DRONE TECHNOLOGY IN DEFENCE AND SECURITY

Exploring defense technology, it's crucial to scrutinize challenges, trace UAV evolution, and analyze government initiatives. This paper offers a succinct yet thorough overview of India's endeavors to attain self-reliance in the dynamic realm of drone warfare.

Abstract

This paper aims to highlight the questions revolving around the probable as well as the existing challenges in the process of 'indigenisation' of the drone technology in defence and it's manufacture in India. A detailed evolution of the UAV (Unmanned aerial vehicle) also known as drones is studied in this paper along with an analysis of the most particular challenges and hardships that the Indian manufacturing infrastructure has to face while the production of the UAVs. Lastly the paper mentions the government initiatives and the various incentives provided to the research and development centres and organisations. This paper shall enable the readers to get an insight into the whole agenda of the 'challenges' as well as the progress and the future of the 'Drones in defence and security arena' of India.

Introduction

There is a range of varied uses that a UAV (Unmanned Aerial Vehicle) also popularly known as drones, has to play. Starting from armed combat operations to aerial surveillance, search and rescue operations, research for detecting calamities, and most importantly intelligence gathering. So, coming to the point of understanding India's strength in terms of its drone fleet then it can be seen that India maintains a fair fleet, but with limited use. However, it has been a long time since the Indian military operates UAVs in its fleet. Severe technical constraints and long delays have limited the scope of progress in development. Though the Cabinet Committee on India's Security had made a plan to approve the sale of Drones for over

India's TAPAS surveillance drone.

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USD 188 Million, which could be understood as an effort to increase and upgrade the fleet of drones. In that case, a relative amount of effort has been taken towards the indigenisation of India's Defence industry or to inducting various types of equipment made in India. It can be seen that the DRDO (Defence Research and Development Organisation) has developed a small effort by introducing the Lakshya, Nishant, and the Rustom Drones. But still, the main challenge remains at this point regarding the task of indigenisation combined with the point of progress in terms of research and development undertaken till now. Before we move on to the challenges, we must go through the historical trajectory of drones in India.

Tracing the evolution of India's UAV Fleet and the status of its progress

During the 1999 Kargil Conflict with Pakistan, India used drones for the first time. The Indian Air Force used the Canberra PR57 for image reconnaissance. However, this later on proved inefficient and strategically susceptible over the mountainous Kargil terrain. In 2009, the Indian Air Force bought 10 Harops worth USD one hundred million from Israel Aerospace Industries. In 2013 India made an USD 280 million deal with Israel Aerospace Industries for acquiring new Heron drones. Developed with the aid of Israel Aerospace Industries (IAI), the Heron, additionally called Machatz-1, is a Medium Altitude Long Endurance (MALE) UAV. During the 2004 tsunami crisis, these drones were used for rescue operations. In 2006 and 2011, the Indian Navy ordered Heron UAVs for squadron installation in Kochi and Gujarat respectively. One large lacuna within the Herons in India is that they`re no longer prepared for satellite tv or for pc navigation, which facilitates higher variety and wider coverage. Following the tensions on the Line of Actual Control (LAC) with China,

The Indian Army has signed an approximately $20 million contract for undisclosed quantities of a high-altitude variant of ideaForge's SWITCH UAV.

the Army ordered 4 modern-day eras of Herons, called the Heron II. Another drone the Searcher Mk II is a drone that has the persistence of as much as 18 hours. In 2002, the IAF started the use of the Searcher Mk II in the LOC. Another advanced drone was developed with the aid of the American organisation General Atomics Aeronautical Systems. Sea Guardian was a variation of the American MQ-9 Predator B. This was a drone technology used by the US forces as a "remotely piloted plane".

The Indian Army offered a USD 20 million deal (about Rs 148 crore) to concept Forge, for an undisclosed quantity of the superior model of SWITCH tactical drones. These specialized structures are made to function in excessive altitude regions like Ladakh, to be used for aiding the infantry squadrons and unique forces. The IAF also makes use of the form of Kamikaze drones Harpy and the upgraded Harops each procured from Israel.

> The **Indian Army** offered a **USD 20 million deal** (about Rs 148 crore) to **concept Forge,** for an **undisclosed quantity** of the superior model of **SWITCH tactical drones.**

The Defence Research and Development Organisation (DRDO) is a state-run organisation that is working on the making of drones and developing drone technology along with a lot of private companies. The DRDO has initiated the development of indigenous UAV projects. There has been the initiation of an indigenous project which aims at developing a domestic arsenal. Projects like Lakshya which is a target-based drone and is utilised in aerial reconnaissance. Nishant is another drone technology, also known as Panchi, which

is constructed for intelligence accumulation against enemies. The Autonomous Unmanned Research Aircraft (Aura) later known as USAV (Unmanned Strike Air Vehicle) is a defence drone technology that can release missiles and bombs. Rustom is inspired by the American Predator model. It has a Medium-Altitude Long-Endurance (MALE) system and is expected to substitute the Israeli Heron UAV model used by the Indian air force. In 2008, the NRUAV project between Hindustan Aeronautics Limited of India and Israel Aircraft Industries (IAI),

SWIFT & GHATAK UCAV comes under AURA Project which is is designed by the Aeronautical Development Agency (ADA).

was sealed for developing the Naval Rotary Unmanned Aerial Vehicle (NRUAV) that could be utilised by the Indian Navy.

The DRDO also began to manufacture Quadcopters which are low cost and efficient drones generally used for surveillance over the LOC in the Kashmir region by the Indian Army. The research and development branch of the DRDO collaborated with IIT Mumbai to work on a project to develop the 'Netra' quadcopters. Later on, this drone technology was transferred to the start-up company Idea Forge for production.

The drone operations are guided under the Directorate General of Civil Aviation (DGCA) regulations. The new Drone Rules 2021, enables individuals and other organisations in India to own and operate drones. In the year 2017, an Indian teenager named Harshvardhan developed a drone that could be used in landmine detections.

Challenges to the 'indigenisation' of the UAV fleet

Although the DRDO (Defence Research and Development Organisation) was working towards developing UAVs, most of them were procured from the IAI (Israel Aerospace Industries). So, as a result, it can be very clearly understood that India has a somewhat decent number of Drones in service, most of which are imported. But here comes the main objective where there is a dire need in expanding the fleet size. Indian research centres and PSUs play an important role in the indigenisation of defence aviation technologies. However, according to reports, there is a constant lag in the development of aviation technology as part of research development as well as the other infrastructural constraints. Hindustan Aeronautics Limited had to produce the mini-UAVs by 2014 which are still at a halt. There have also been cancellations of many

projects like Nishant and Panchi, and these are largely caused due to lack of resources and funding. Financial restraints are a huge drawback force of the growing start-ups and MSMEs. They cause a halt to their efficiency as well as innovative ideas for developing drone technology. But the biggest drawback would be the absence of the officials of the armed forces in the construction process.

There is also an inadequate protective mechanism to safeguard the Intellectual Property Rights (IPRs) of the systems designed and developed. There is a presence of competition with others during the tendering process initiated by the production agencies, i.e., the Public Sector Units. Though the programs of AASSC (Aerospace and aviation sector skill council) are ambitious; some of the programmes are still undergoing the ideation phase. The growth is slow though many initiatives have been taken under

the 'Make in India' scheme. The research and development sectors as well as the educational institutes need to be encouraged and funded with proper monetary assistance along with other PSUs to boost the manufacturing sector.

The research organisation and the public/private sectors have some flaws as well. There is no certainty whether the indigenous products would be selected for induction by the armed forces or not. It needs to be understood that delays and technological challenges are inescapable realities in pursuit of developing indigenous capability. India's R&D (Research and development) normally assesses the complete products and does not assess the indigenisation of enabling technologies. Also, there is no joint mechanism to assess the weaknesses of indigenously designed products, and efforts are required to overcome them by acquiring enabling technologies to make them compliant with the users' requirements rather than going for Aviation projects. It takes decades to finish such projects, and often face several technological challenges during the prototyping and ideation phase. If such indigenous projects show significant progress and are viewed as competitors to the products developed by global aviation giants, they are subjected to aggressive propaganda against them due to the lack of trust and confidence among the public on domestic manufacture.

To ensure a gradual manufacture of a chain of drones, the government should enhance the scope of its skilful programs for drone pilots, assemblers, package developers, drone information analysts, flight planners, technicians, geographic system engineers, and hardware makers. Drone rules exempts instructional establishments, start-

> The **DRDO** also began to manufacture **Quadcopters** which are **low cost** and **efficient drones** generally used for surveillance over the **LOC in the Kashmir region** by the Indian Army

'Bharat 150'- multi-payload drone by Kalyani Group unveiled.

India's Naval Anti-Drone System made by BEL and developed by DRDO.

ups, drone makers, and analysis entities from requiring UINs (Unique Identification number), certificates of soundness, remote pilot licenses, and permission for the exploitation of drones for analysis functions.

The previous versions of drone rules needed the research and development organisations to ask for many permissions, which caused increasing compliance and deterred innovations. The New Rules also mention conditions that are required to be met for the research and development centres. Exemptions like handling operations within the premises of the research and development centres or within an inexperienced zone or an open space within the inexperienced zone are

prescribed. However, the chances of an accident are a lot less.

Sturdy research-centric countries like Australia and North American nations have mandated the registration of drones for research and development. As states gear towards turning into a drone-producing hub and developing their manuals for the business use of drones, the Bureau of Indian Standards commission on UAV standardization will assist in developing consistent standards across states for the method of producing, maintaining, testing, training, information sharing, and traffic management. Inconsistent standards severely impact trade obligations, usually at the price of innovation.

Way forward

Hindustan Aeronautics Limited had signed a Memorandum of Understanding (MoU) with Aeronautical Development Establishment and National Aerospace Laboratories for the production of micro, mini, and MALE UAVs. NAL had designed the micro and mini-UAVs and developed the Rustom-I UAVs. HAL however did not start the commercial mass production of the UAVs yet which was set to be done by the year 2014.

The level of research that is required for developing anti-drone systems is (still at the beginning stage) coming into an organisational effort, where the DRDO has been working to develop an anti-drone system. In

IAI Heron (Machatz-1) is a medium-altitude long-endurance unmanned aerial vehicle (UAV) developed by the Malat (UAV) division of Israel Aerospace Industries.

that case, it can also be understood that if India needs to take up the task of developing its foothold in this field, then it needs to develop the path of fast-track research and development to have systems that can be widely used. Also there lies the challenge of ensuring a strong strategic deployment and preparing the required amount of funds to be spent.

This can be understood from one such project which is the 'Project Cheetah' for the Indian Air Force that was initiated following the Indo-China Standoff. Under this project it was sought that the Israeli Heron Drones which were operated by the three-defence services would go through a complete overhaul which will consist of an upgrade of being armed with some efficient and modern defence systems. This would be seen as a conversion of the Unarmed Israel-made Heron Drones to Armed standards.

In 2021, the government of India provided incentives of up to 20% to

To ensure a **gradual manufacture** of a chain of drones, the government should **enhance the scope** of its skilful programs for drone pilots, assemblers, **package developers, drone information analysts,** flight planners, technicians, geographic system engineers, and **hardware makers.**

the manufacturers of drones. During the introduction of the 'Drone Shakti' in Budget 2022, Finance Minister Nirmala Sitharaman stressed the need for advanced drone technology and discussed that drone service throughout the nation shall be smoothly implemented via the innovative 'Drone Shakti' schemes in the budget that was presented in 2022.

However, indigenous start-ups are also being sought after under the Make in India Initiative to boost the Domestic Industry, where indigenous start-ups are the prime areas of focus of the Indian Armed Forces. As a result of this effort, it can also be seen where a Firm from Mumbai, had introduced a vertical take-off and landing fixed-wing Hybrid Unmanned Aerial Vehicle, which
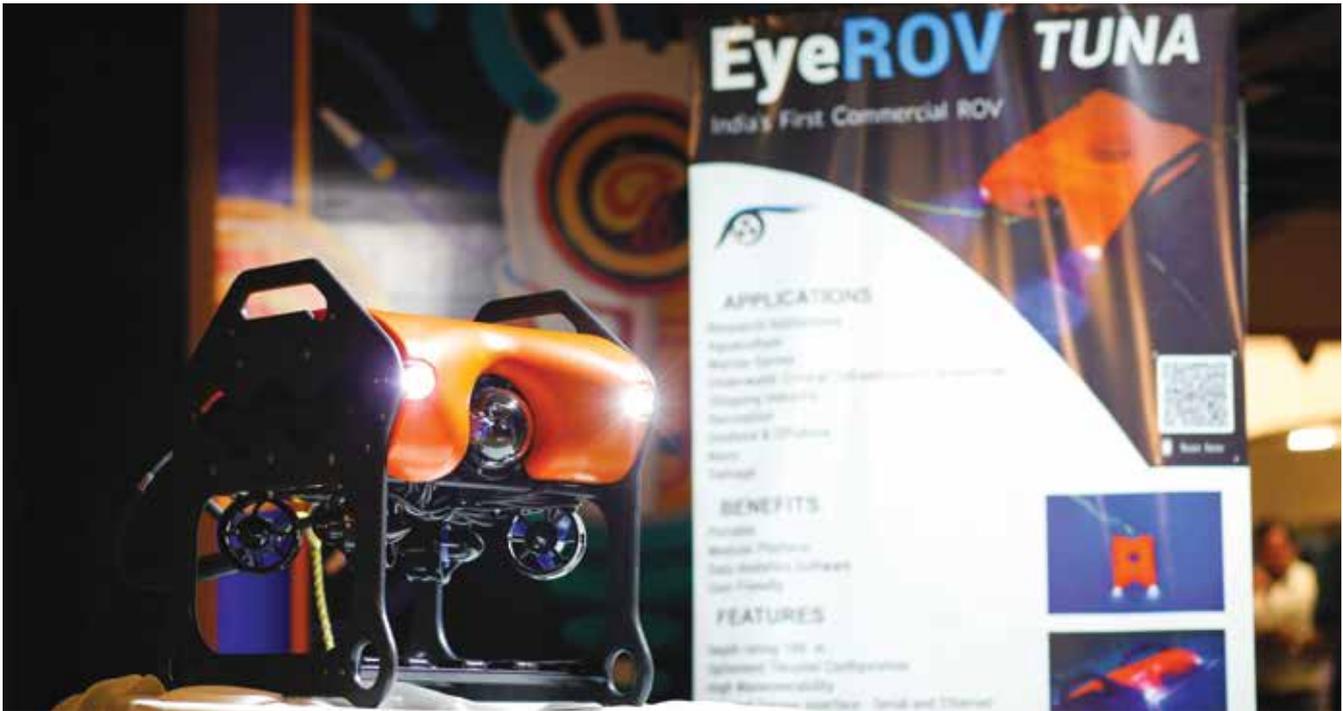
EyeROV (IROV Technologies Pvt. Ltd.) vision is to be the technology leader and solution provider in underwater critical infrastructure inspections and surveys.

has been very recently delivered to the Indian Army under an order of worth USD 20 Million as of January 2021.

In this way too, there are many Indian Private Firms and top National Universities which have come to offer assistance in developing batteries, high-propulsion systems, datalinks, and algorithms which consist most importantly the jamming technology, which is another very important part of a drone that makes it lethal in terms of its real nature.

Though the ongoing war in Ukraine has once again highlighted the importance of drones in combat operations. But on the same hand, the Government of India has stood firm in promoting 'self-reliance' through the Make in India Initiative. In that case, the major challenge comes in terms of ensuring strong evidence in favour of strengthening the potential of Indian defence industries towards initiating more research

and development. Thus, the main aim, in this case, is to understand the impact of the government of India's programmes. Whereas, the research also looks forward to understanding the strategic balance in comparison to the development of UAVs in India. Though the challenge comes at the point where India lags in comparison to Pakistan and China in terms of UAVs. As they both have collaborated in areas of development and acquisition of various military platforms, especially UAVs. But both these nations have also involved their Private Industries to focus on the development of small and medium UAVs because of their low cost and duration, economic affordability, and export value.

Even though India ranks third in the entire world, looking from the angle of military spending. But in a way, India's drone program has suffered some losses due to delays in policy implementation, lagging efficiency, and lack of adequate funding for research for many years

that is taking it behind China and Pakistan. Apart from these issues, EveROV Technologies developed and introduced India's first commercial underwater drone, alongside Sagar Defence Engineering which made an unmanned underwater drone that attracted the interest of the Indian Navy.

Still, India needs to work on developing its capability in terms of making the major technical features that are required to be placed in a drone, like the motors and electronics and the engine. India is currently working in that field to develop jet engines for its indigenous aircraft which have been planned for the future. But in a way, the drone industry of India expects a boost, following the Government of India's decision to place a ban on imports of defence equipment in February 2022, excluding drone components. With the beginning of a new era in terms of warfare, there is a desperate need for India to ensure that its military is well equipped and is ready for being used in an uncertain scenario. **DSA**

INDIA'S STRATEGIC
MARITIME EVOLUTION

In the dynamic landscape of global geopolitics, India's commitment to fortifying its naval prowess stands out, especially in the strategically vital Indian Ocean and Indo-Pacific regions. Recent acquisitions, such as the deployment of 26 Rafale-M Jets and a state-of-the-art aircraft carrier from France, underscore India's focused effort to safeguard its maritime interests.

Abstract

National security and interest is the utmost priority of every country. In this 21st century, global politics and power rivalries have taken place overseas. As a result, every country is trying to enrich and enhance its Naval Power to secure its own maritime environment. As India holds a geographically strategic position in the Indian Ocean Region, as well as the Indo-Pacific Region, it is a must for India to enhance its Naval Power to secure its Blue Economy. Recently India has adopted 26 Rafale-M Jets and Aircraft Carriers from France. Technologically these fighter jets are much more developed and improved versions of the earlier ones used by the Indian Navy. These fighter jets are made only as a marine version. So undoubtedly this aircraft addition of the Indian Navy is a meticulous and shrewd approach of India to enhance its abilities to secure its own maritime environment. This article will focus on the geopolitical significance of India's maritime environment as well as, it will also explore the significance of Rafale-M Jets which India recently included in its Naval Power.

Introduction

"He who commands the sea, has command of everything"

Themistocles

The 21st century is widely recognised as the Maritime Century, with nations worldwide prioritising their maritime environments for national security, economic growth, and global trade. Geographically

After wide-ranging talks between Prime Minister Narendra Modi and French Emmanuel Macron, the two sides also came out with 'India-France Indo-Pacific Roadmap' and asserted that they believe in a free, open, inclusive and secure Indo-Pacific region.

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enhancement of its Naval Power is imperative. A recent milestone in this endeavor is the agreement with France for the acquisition of 26 Rafale-M (Marine) Fighter Jets, an Aircraft Carrier, and an additional three submarines for the Indian Navy. The inclusion of Rafale-M Jets is regarded as a strategic and judicious move by India, significantly augmenting the Indian Navy's capacity to secure and defend the nation's maritime interests.

Given India's vital position in the Indian Ocean Region, which holds immense geostrategic significance in the broader Indo-Pacific context, it is imperative for India to strengthen its engagement and maintain a leadership role. In this context, the ongoing development of the Indian Navy plays a crucial role, ensuring that India remains a key player in shaping the security dynamics of the region.

and historically, India occupies a strategic position in both the South Asian and Asian regions. Its significant maritime environment positions it as a major power in the Indian Ocean and Indo-Pacific regions. In line with the global trend of enhancing naval capabilities in this maritime era, India, leveraging its geostrategic location, is actively bolstering its Naval Power and Naval Diplomacy to safeguard its extensive maritime domain.

Recognising India's pivotal role in the Indo-Pacific Region, the

RAFALE-M Armed with 2-MICA-IR Short Range & 4-MICA-RF Medium Range Air to Air Missiles.

The Stealth Destroyer Ship INS Mormugao.

Geopolitical Significance of India's Maritime Environment

India poses a great importance in world politics for its geo-strategic location. Being the 5th largest economy in the world, and 7th largest country by area, it plays a major role in the South Asian Region. India is strategically located at the crossroads of major international maritime routes, including the Indian Ocean, Arabian Sea, and the Bay of Bengal. This geographic positioning gives India a pivotal role in global maritime trade and security. As a result, India has become a major key player of the Indo-Pacific Region too. In the Indo-Pacific issue, India shares a common vision of a free and open Indo-Pacific Region with the US, Japan, EU, ASEAN and others. Here are some important key points about the significance of India's maritime environment:

i) **Indo-Pacific Strategy and India:** As it is a Maritime Century, the Indo-Pacific region has become the playground of world politics. The Indo Pacific term denotes

> Being the **5th largest economy** in the world, and **7th largest country** by area, **India plays** a major role in the **South Asian Region.**

two oceans- Indian Ocean and Pacific Ocean. Here, India is a major key player in the Indian Ocean Region. India's national interests are inherently tied to the region's dynamics and it occupies 40% of strategic waters. And Indian Ocean is a main part of the Indo Pacific Region. This region covers 60% of global GDP, 2/3 of global economic growth, 65% of the world's oceans and 25% of its land. So geographically this region poses a great importance to the world powers. In recent years, China's expansion in this region has increased, as China expanded its Naval activities over this region, US and India

both consider this as a matter of concern for them. To contain China's expansion over this region and maritime environment, the US declared its Indo-Pacific Strategy in February 2022. After coming to power, President Joe Biden announced this strategy. This strategy denotes the centrality of the region to core US interests and its forthright characterisation of challenges posed by China. Here, firstly the US talked about focusing on the modernising of longstanding alliances. This means that, those countries which already have a long-standing relationship with the US, it will modernise its relationship through new

From left, US President Joe Biden, Australia's Prime Minister Anthony Albanese, Japan's Prime Minister Fumio Kishida and India's Prime Minister Narendra Modi hold a Quad meeting on the sidelines of the G7 summit.

initiatives or security alliances. And in this case, India plays an important role too, as India has a long standing relationship with the US.

ii) **QUAD and India:** The Quadrilateral Security Dialogue (Quad) comprises Australia, the United States, Japan and India. As the word Security is in the name, so it is perceived that it is a military alliance. So, it can also be called the NATO of Asia. It was officially established in 2007 with the supervision of Former Japanese Prime Minister Shinzo Abe. The US believes that the Indo Pacific strategy can never be implemented without Quad. It has two aims. Firstly, To facilitate the free and open navigation of US, Japan, and Australia's in the Indian Ocean and the Pacific Ocean. And Secondly, To counter China's expansion in the Indo Pacific region. And in this scenario, India is the only member from this South Asian Region. It is mainly because of its geostrategic location and maritime environment.

Rafale-M Jets – "A Game Changer"

In this naval century, every country is trying to enhance its own naval power to secure its maritime environment. In India's vicinity, there are major shipping choke points of the world, like- Strait of Hormuz, Bab-el-Mandeb Strait and the Strait of Malacca. So, it is compulsory for India to enrich its naval power for its own sake. The Indian Navy is already the most powerful Navy amongst the littoral nations of the Indian Ocean Region. As an expansion of the capacity of its naval power, the Indian Navy recently added 26 Rafale-M (Marine) Jets in its Naval Power.

In the mid of 2023, India had major defense deals with the US, including the co-production of the GE 414 Fighter Jet engines and the acquisition of MQ9B Drones. Then, India had another defence deal with France for 26 Rafale-M Fighter Jets for its Navy, when Prime Minister Narendra Modi visited France as a guest of honour to witness the Bastille Day Parade on July 14, 2023.

Features of Rafale-M

The Indian Air Force is already flying 36 Rafale Jets that are received from France, and jt would definitely enhance support, training and maintenance for Indian Navy's Rafale-M Jets. There is 80% similarity between the Airforce and Marine variants of Rafale. And the naval version of the Jet is a bit different from the Airforce version. Before the Rafale-M jets, India was operating two aircraft carriers, which were operating Mig-29s which had a range of about 1500km and it was much smaller than Rafale-M Jets. Besides the extensive flight trials, the Indian Navy got impressed by the Rafale Marine Variant, during various joint exercises with France.

The features of Rafale-M which made it different from the Airforce version, are as follows:

i) Rafale-M can operate from aircraft carriers.

ii) It has a carrier based microwave landing system.

iii) Include a Built-In Ladder for direct access to the Cockpit.

iv) It has a wider range of weapons including anti-ship missiles.

v) Radar is maritime-optimised.

vi) Rafale-M is heavier than its Air Force counterpart.

Actually the features of Rafale-M have been specially designed for naval operations. The Chief of Naval Staff Admiral R. Hari in an interview to Times Now, said that, "Recently, onboard INS VIKRANT pointed out the need for multirole fighter jets for Navy and the Navy's recommendation for Rafale-M as it best suits the requirements of IAC". On the other hand, Naval Expert Capt. Alok Bansal (R) expressed his thoughts in an interview over Rafale-M Jets. He said, "As the Indian Ocean is a vast ocean space, the Indian Navy needs an improved version of an aircraft. In this case, Rafale Air Force is already operating, so consequently a naval version maintenance operations would be far easier. Because there will be a lot of informality. Though, the maritime version is slightly different from Rafale. Because of its specific maritime requirements."

In **India's vicinity,** there are major **shipping choke points** of the world, like- **Strait of Hormuz,** Bab-el-Mandeb Strait and the **Strait of Malacca.**

Prime Minister Shri Narendra Modi attended Bastille Day Parade as Guest of Honor at the invitation of HE Mr. Emmanuel Macron, President of France, on the Champs-Élysées on 14 July 2023.

Rafale-M Fighter Jet (Source: Hindustan Times).

Significance of Rafale-M in Securing India's Maritime Environment

It is evident that, Indian Navy is the most powerful amongst the littoral nations of the Indian Ocean. Besides, they have been in the forefront of providing support to others. Some of the examples can be included like: When there was a crisis in Lebanon, the Indian Navy evacuated their own citizens as well as their neighbourhood country's citizens. Besides, when there was an evacuation of Indians from Yemen, the United States government used an advisory saying that any American citizens in Yemen who want to be evacuated should contact the Indian Embassy and the Indian Navy will evacuate them. So it was a great responsibility for the Indian Navy. But apart from this, they also have responsibilities to protect and secure their maritime environment. The Ship Fleets they have, have enormous responsibility and to fulfil this responsibility more efficiently, they need aircraft to enrich their performance. And in this case, Rafale-M Jets have added enormous possibilities and greater reach to the Indian Navy. Because India poses an important strategic zone beside the Strait of Hormuz, Bab-el-Mandeb Strait, and the Strait of Malacca. These are those places where the ships from the whole world congregate, and to protect these areas from any hostile ingress, Indian Navy must have to keep those under surveillance.

In recent years, the PLAN has increased its activities over this sea area and China's claim of being the owner of South China Sea is a big concern for India as well as all the Indo-Pacific regional countries. So in that case, India has to increase its naval activities and ensure the utmost development. Rafale-M Jets pose an important factor as a sign of immense development in the sector of the Indian Navy.

Conclusion

A Latin American proverb wisely asserts, "Si Vis Pacem, Para Bellum," emphasising the imperative of preparing for war if one desires peace. In line with this adage, nations across the globe are actively fortifying their security and military capabilities. Geopolitical expert Robert D. Kaplan, noting the profound insight maps offer, underscores their role in shaping our understanding of global dynamics. In the 21st century, the locus of conflict has shifted to the seas, as highlighted by Kaplan, with the strategic importance of maritime areas becoming increasingly evident.

Contrasting with the 20th-century land-centric world wars in Europe, the 21st century presents new challenges, particularly in East Asia, where control over sea territories becomes a focal point. Recognising its pivotal role in this dynamic region, India is proactively preparing itself to effectively counter any threats to its security and maritime interests. As part of this strategic initiative, India has acquired 26 Rafale-M Jets for the Indian Navy, featuring advanced capabilities.

These sophisticated aircraft not only enhance the Indian Navy's capabilities but also instill a resilience and preparedness to tackle emerging threats to the security of its maritime environment. India's strategic foresight and investment in modern defense technologies reflect its commitment to maintaining regional stability and safeguarding its national interests in the evolving geopolitical landscape. **DSA**

IS PAKISTAN ITCHING
FOR WAR WITH INDIA?

Tensions between India and Pakistan are escalating, with fears of an imminent conflict driven by internal power struggles in Pakistan and concerns over upcoming elections. Recent incidents, including a terrorist attack, highlight the volatile situation. Collaboration with China adds complexity. India must stay vigilant amid the looming threat of war, ranging from skirmishes to a more prolonged conflict.

The answer is in the affirmative. And it might happen before National Assembly elections on Pakistan, in 08 February 2024, so as to serve as an excuse to postpone them. Recent upsurge

> A **terrorist attack in Poonch**, the other day, on an **army convoy,** has led to the **martyrdom of four Indian soldiers**

At least 12 people were detained for questioning in association with the terror attack in Jammu and Kashmir's Poonch, which killed five Indian soldiers.

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in terrorist acts in J&K gives an indication of such an intention of Pakistan. A terrorist attack in Poonch, the other day, on an army convoy, has led to the martyrdom of four Indian soldiers. It is alleged that some 25-30 militants have infiltrated into J&K to intensify terrorist attacks, so as to provoke India for a military conflict. India has launched a major operation in Poonch Area to eliminate them.

Recent outbursts by Pakistan's "care-taker" Prime Minister in 'Azad Kashmir' Assembly to engage India in over 300 wars, also gives out the blueprint of such a thinking of Pakistan. Pakistan's permanent

Chinese President Xi Jinping meets Caretaker Prime Minister of Pakistan Anwar-ul-haq Kakar, who is in Beijing for the third Belt and Road Forum for International Cooperation, at the Great Hall of the People in Beijing, China 19 October 2023.

representative in UNO has recently threatened to launch nuclear strikes on India. There has to be a reason for such unprovoked threats from two key office holders of Pakistan.

Indo- Pak war would also serve the interests of China, who was keen to retard India's economic growth and development. Reports coming from China say that the Chinese economy was crumbling. Therefore Xi Jinping of China would encourage Pakistan to engage India militarily to stall its rapid growth. It is in this context that military sources of India allege that Pakistan's latest misadventure in Poonch was in collaboration with China. It is very much possible.

The internal situation in Pakistan gives a clear indication that Pakistan Army wants to delay/ Postpone coming National Assembly elections in Pakistan. The reasons for this are the prospects of Imran Khan's Party, PTI, winning the scheduled

> Therefore **Xi Jinping of China** would **encourage Pakistan** to engage **India militarily** to stall its **rapid growth**

elections on 08 February 2024. In Spite of Imran Khan being in jail and disqualified, his popularity has not diminished. In fact it has risen. It is on record to know that Imran khan and General Asim Munir, the current Chief of Pakistan Army were at daggers drawn with each other.

As long as Asim Munir was the Chief of Pakistan Army, he would not allow Imran Khan to come to power. To do so, he can wage a war with India, not only delay elections but also work on minimising Imran Khan's probability of winning elections. If Imran Khan comes to power, not only General

Asim Munir but also many other Generals, including retired, would face his wrath.

It is no rocket science to know that the Pakistan Army does not want this to happen, particularly after what had happened on 09 May 2023. The incident relates to PTI workers' response to Imran's arrest, when they had attacked Army installations, including the residence of the Corps Commander at Lahore. His arrest was in response to various cases of corruption, such as the "Toshakhana" (Treasury) case, when he was the Prime Minister. He was

Imran Khan, Pakistan's former prime minister.

alleged to have manipulated rules to undervalue and take away the gifts, given to him as Prime Minister, by the foreign Governments. Despite his arrest, the spirit of his supporters has not been dampened.

Besides, the situation in Balochistan has become uncontrollable. Only the other day Islamabad, capital of Pakistan, faced a violent situation when people of Balochistan marched into the city to know about the fate of "missing youth" from Balochistan, who had been allegedly arrested, over the years, by Pakistan Military. Situation there is getting worse day by day. Suicide attacks by Baloch separatists have intensified. Separatist movement is gaining momentum. Situation in KPK is no better. Daily attacks on Pakistan Army posts by TTP along the Durand Line have further worsened the security situation.

The situation in POT JAK (Pakistan Occupied Territories of J&K) is far from normal. Rising prices of daily items, cooking gas and electricity has led people to revolt. Anti- Pakistan sentiments were swelling. In so-called 'Azad Kashmir', local people have uprooted electric poles out of anger. They say that Electricity was produced in POT JAK at the rate of ₹10/ unit but given to local residents at the rate of ₹80-100/ unit. Some elements in GB were openly expressing a desire to join India. Indian Home Minister's recent statements in the Indian Parliament have further added fuel to the fire.

In view of the above , the easiest way to divert attention of the people from local issues and checkmate Imran Khan from coming to power, a limited military conflict with India was the answer. Thus, the war with India would kill two birds with one stone. It may also serve the purpose of the US to arm twist India — who is cut off by India's stance on Ukraine. It may be noted that Pakistan's army Chief, General Asim Munir and his ISI Chief Lt Gen Nadeem Anjum were in the US — probably briefing and seeking her approval. It may be noted that JOE BIDEN, US President has, at the last moment, turned down an Indian invitation to be the chief Guest on Indian Republic Day Parade on 26 January 2024. It is normally not done because a formal invitation was sent after informal approval. There is something fishy.

Therefore the Indian army and the nation has to be on the alert in the month of January 2024, to deal with the war- like situation, if not a full - fledged war. It could be another Kargil type operation. To ensure that India does not escalate the conflict beyond LC, say into GB, Pakistan has begun to give nuclear threat. So, from all accounts, Indo - Pak war was imminent by the time POTUS (President of The United States) gave his "State of the Union" address. Size and scope may vary from skirmishes on the LC to an intense conflict of 10-12 days. Keep your fingers crossed! DSA

NATIONAL SECURITY AT STAKE:
UNRAVELLING CONCERNS IN WEST BENGAL'S CURRENT SOCIO-POLITICAL LANDSCAPE

In West Bengal, recent assaults on Hindu Sadhus and the emergence of Shariah-governed areas raise concerns about religious freedom. Rooted in historical patterns, this anti-Hindu sentiment poses a threat, prompting the need to safeguard cultural diversity and inclusivity in the region. The state's trajectory calls for concerted efforts to protect the rights of Hindus and preserve its rich heritage. Addressing these concerns is crucial locally and holds national significance for India's vision as a diverse and harmonious democracy.

In a disturbing echo of the infamous Palghar incident, a group of Hindu Sadhus in Purulia, West Bengal, faced a harrowing assault, allegedly stripped by a violent mob provoked by the local CPIM workers, during their journey to Gangasagar for the auspicious 'Makar Sankranti' festival. This distressing event not only raises questions about the state's law and order but also sparks serious concerns about the safety of Hindu religious pilgrims in a region that has historically been the cradle of Hindu saints. This incident draws an unsettling parallel with the 2020 Palghar lynching in Maharashtra, where two Hindu sadhus and their driver were ruthlessly beaten and stripped by a violent mob. The similarities intensify scrutiny and

Twelve people were arrested after three sadhus from Uttar Pradesh, en route to the Gangasagar Mela in West Bengal, were beaten by a mob. The incident happened in Bengal's Purulia district after the locals suspected the sadhus of being kidnappers.

SREOSHI SINHA

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fuel fervent calls for justice for Hindus in a region with a Hindu majority.

Hinduphobia in West Bengal can be traced back through historical epochs, revealing a recurring pattern of marginalisation and concerns for the Hindu community. The recent incident involving the humiliation of revered Hindu figures is just one manifestation of this deeper issue.

The roots of Hinduphobia in the state extend to the colonial period when Calcutta served as the capital of British India. During this time, certain narratives and perceptions were established that contributed to

> The **roots of Hinduphobia** in the state extend to the **colonial period** when **Calcutta** served as the **capital of British India.**
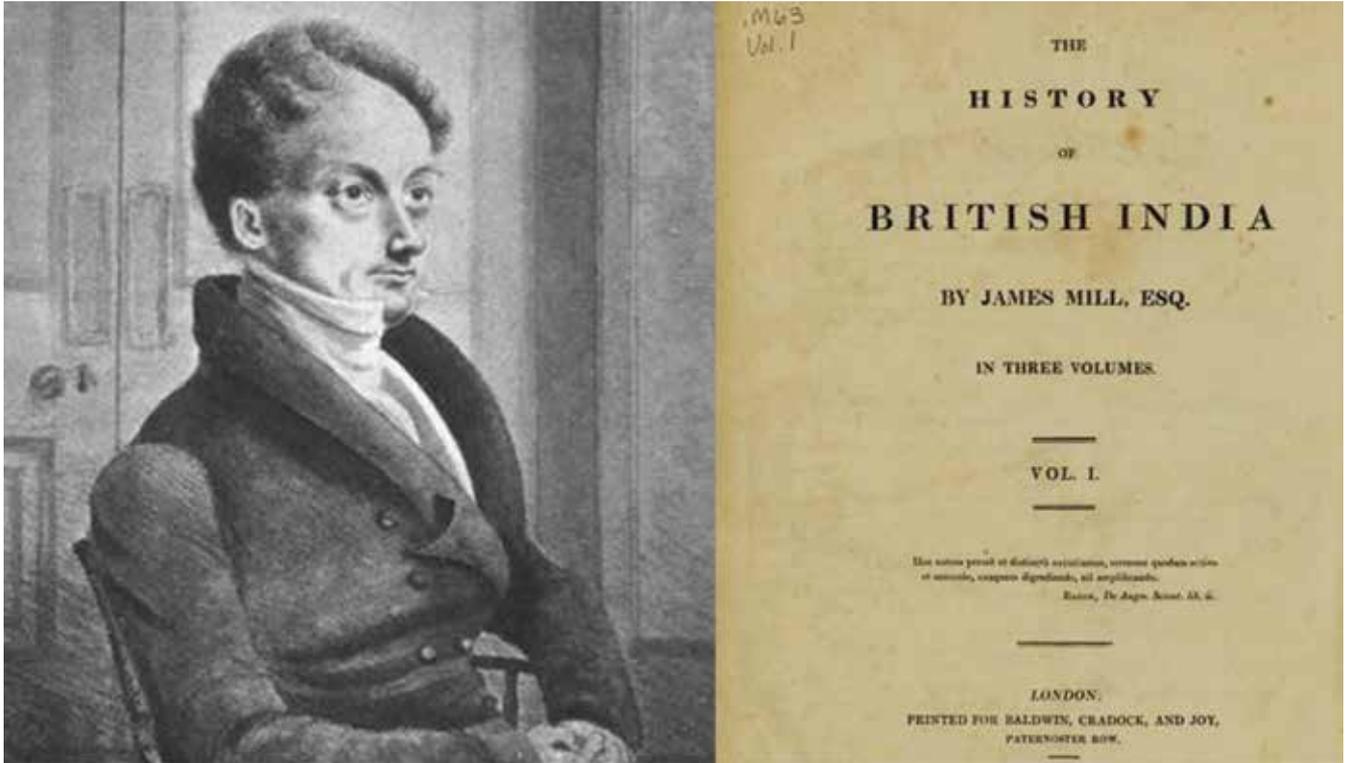
James Mill and his "The British History of India" - Two perfect metaphors for the bigotry and colonial arrogance that was the British Raj.

the unfavourable image of devout Hindus. This negative portrayal persisted through subsequent political eras, including Congress rule and the extended Communist regime.

The present-day manifestation of Hinduphobia under the Trinamool Congress (TMC) governance adds another layer to this historical context. Concerns have been raised about the increasing vulnerability of Hindus, with accusations of the party's perceived leniency towards Islamic infiltrators and sympathisers. This has fueled apprehensions that West Bengal might align with the aspirations of forming a greater Islamic Republic of Bangladesh.

The recent incident, while shocking, is not an isolated event but rather a symptom of a historical trend. The state, which has been the birthplace of numerous saints and mystics,

> In his book, **"The History of British India," James Mill** played a **pivotal role** in shaping **negative perceptions of Hindus.**

finds itself grappling with issues that undermine the sacred tapestry of Bharat. Understanding the origins of Hinduphobia in West Bengal requires an examination of historical transitions and political epochs, emphasising the need for a nuanced approach to address these deep-seated concerns.

Apparently, Mill's writings and ideas, shaped by a Eurocentric lens, ingrained in his writings, played a role in perpetuating stereotypes and biases against Hindu traditions. In

his book, "The History of British India," James Mill played a pivotal role in shaping negative perceptions of Hindus. He depicted them as deceitful and criticised their religious ceremonies as 'contemptible and absurd.' Mill unfavourably contrasted Hindu practices with what he perceived as the 'natural equality of mankind' in Islam, going so far as to assert that Hindus exhibited qualities akin to slaves, while characterising Muslims as possessing more masculine traits.

Winston Churchill.

Continuing the legacy of negative perceptions, Thomas Babington Macaulay, renowned for advocating English education in India, amplified the critique initiated by James Mill. In alignment with Mill's disparagement of Hinduism, Macaulay described the religion as 'unfavourable to moral and intellectual health,' pointing out perceived absurdities in Hindu physics, geography, astronomy, and art. Interestingly, Macaulay held Islam in high esteem, considering it part of a 'better family' and closely related to Christianity. His influence extended beyond intellectual spheres to the shaping of colonial policies, particularly in the legal system. Macaulay's support for English education and his critical stance on Hinduism played a crucial role in moulding the colonial approach to governance and cultural assimilation in India, leaving a lasting impact on perceptions of Hinduism in the region.

In the continuum of British influence on perceptions in India, the nineteenth century witnessed a sustained preference for Islam, building upon the groundwork laid by figures like Thomas Babington Macaulay. British rule operated in acknowledgment of the Mughal Emperor as the ultimate authority, following Mughal law within diverse court systems. Sir George Campbell emphasised the substantial reliance on Mohammedan law, arguing that its elimination would leave no basis for defining or penalising common crimes. This reliance even extended to Englishmen pronouncing sentences based on fatwas issued by Muslim law officers.

Winston Churchill, who succeeded Macaulay, further perpetuated biases, particularly against Hinduism. His disdain for the Hindu community was evident in derogatory remarks during a 1945 dinner, where he expressed a desire for bombers to destroy them and characterised Hindus as a "foul race." This deep-seated bias against Hindus was rooted in Churchill's perception of their perceived weakness, contrasting with his preference for the martial qualities associated with Muslims.

Interestingly, despite any antipathy Churchill may have held towards Hinduism, he displayed a profound fascination with Islam. This fascination dated back to his childhood, where he contemplated the idea of converting to Islam, showcasing a deep interest and admiration towards the faith. Even during World War II, Churchill falsely claimed to Roosevelt that the majority of Indian soldiers were Muslims, not Hindus, emphasising his distinct affinity for Islam and further complicating the historical backdrop of religious biases in British-ruled India.

The persistence of such sentiments extended into independent India, as

demonstrated by the apprehensions expressed by Francis Tuker, a retired head of Eastern Command in the Indian Army, in 1950. With 33 years of service, Tuker voiced concerns about the spread of Communism in the newly independent nation. He expressed his apprehension, stating, 'The Iron Curtain...clanks down between Hinduism and all other systems and religions.' Tuker foresaw a precarious phase for Hindu India, where its traditional religious fabric might be replaced by another ideology. In Tuker's perspective, the breakdown of Hindu religion, perceived as superstition and formalism, would create a void that Communism could potentially fill. To counter this perceived threat, he suggested the necessity of placing Islam as a buffer between Russian Communism and Hindusthan. Tuker's reflections highlight the enduring anxiety over the vulnerability of Hinduism, even in the post-independence era, as various ideologies vied for influence in the shaping of India's socio-political landscape.

The Communist era in West Bengal, despite its proclaimed atheism, revealed a shared disdain for Hinduism, continuing a historical trend of biases against the majority religion. This antipathy is exemplified by the alliance between communists, colonisers, and Islamists during Direct Action Day in 1946, showcasing a convergence of interests that transcended ideological differences.

It is noteworthy that despite the Communist Party's proclaimed atheism, its actions often demonstrated a nuanced approach that aligned with certain interests, including those of Islamists. The unfortunate reality for the colonists was that the Communist Party of India, founded in 1925 by MN Roy, came into existence a mere 22 years before the complete departure of the British from India. This limited time frame meant that the British could utilise communists as informants for only two decades, highlighting the

> It is **noteworthy** that despite the **Communist Party's proclaimed atheism,** its actions often **demonstrated** a **nuanced approach** that aligned with certain interests, including those of **Islamists**.

Communist banners in West Bengal.

Calcutta policemen use tear gas bombs during the communal riots in the city.

brief but impactful collaboration between colonial powers and communists in shaping the political landscape in Bengal and beyond.

Beyond the intriguing alliance between communists and colonisers, there existed substantial ties with Islamists. Notably, during the infamous Direct Action Day on August 16, 1946, orchestrated by Huseyn Shaheed Suhrawardy, head of the Pre-partitioned Bengal Province government and a devoted member of the All India Muslim League, three prominent communist leaders from Bengal, including Jyoti Basu, Rup Narayan Roy, and Ratanlal Bharhman, were present on the stage. While it might be tempting to assume that only three communist leaders participated, the reality is that, at that time, communists held only three seats in Bengal. Therefore, these three leaders constituted the entire communist representation in Bengal during that period.

Even after Direct Action Day, when a no-confidence vote was being passed by Hindus in the Bengal Legislative Assembly, Jyoti Basu, who later became the Chief Minister of West Bengal, supported the Muslim League. He argued that the disturbances were the fault of the Bengali governor who allowed people to observe a holiday on August 16, 1946. In this decision, Basu was guided by the then CPI Secretary Puran Chandra Joshi, who, in a letter, emphasised the importance of neutrality to maintain the hold on the organised working class. Joshi expressed this sentiment in a letter to Basu, stating...

….."*If we cannot keep up even our hold on the existing organised working class, everything is lost, even for the future. Thus the best way possible to keep all in good humour was to stay neutral. voting against The Muslim League will have other serious implications…*"

Indeed, the ideology appears to deviate from a focus on national welfare, instead emphasising control over the working class by fostering a sense of grievance. The strategy involves portraying the state and religion as instruments of oppression, cultivating the perception among the working class that they are victims of state oppression, so that this narrative pushes these individuals towards identifying with communism as a solution to their perceived grievances. Another relevant point is that, despite Karl Marx's assertion that Communism begins where atheism begins, a pronounced antipathy towards religion seems to be primarily directed at Hinduism. This is unmistakably evident in the consistent support that communists in Bengal extended to Islamists, persisting from the inception of their rule until its end in 2011. This pattern reveals communism not as a steadfast ideology but rather as a convenient tool influenced by political expediency.

The manifestation of anti-Hindu sentiment reached a disturbing pinnacle in January 1979, when, under the deliberate patronage of the Chief Minister of Bengal at the time, Jyoti Basu, the Communist Party of India (Marxist) (CPIM) orchestrated a heinous massacre reminiscent of Jallianwala Bagh. Approximately 56,000 destitute Dalit Hindu refugees, who had recently fled Bangladesh seeking refuge on Marichjhapi, a small island in West Bengal's Sundarbans, fell victim to this orchestrated violence. Shockingly, these were the very Hindus who had played a pivotal role in bringing the CPIM to power, lured by the promise of a better life under the leadership of Jyoti Basu. Little did they anticipate the grim fate that awaited them. A parallel incident of brutality unfolded during the Bijon Setu massacre when 16 monks and a nun of Ananda Marga were ruthlessly lynched and burned alive in broad daylight in Kolkata. This appalling atrocity was executed under the direct orders of Jyoti Basu, then Chief Minister of West Bengal. Despite being an icon of communism, Basu hailed from a privileged upper-caste family, hypocritically preaching about the plight of the poor and hungry in public while orchestrating such heinous acts against his own citizens.

> The **rising Hinduphobia,** exemplified by ominous slogans and a **dangerous game** involving **secular, liberal,** and communist **Hindus unwittingly,** adds a layer of complexity to this **narrative.**

Jyoti Basu was an Indian politician belonging to the Communist Party of India (Marxist) from West Bengal, India.

With the advent of the TMC government in 2011, the situation in West Bengal worsened. While the CPIM, under the guise of promoting atheism and secularism, propagated hostility towards Hinduism, the TMC openly favoured Islam over Hinduism for electoral gains. A glaring instance is the Kolkata Mayor, a Muslim himself, expressing a desire for Bengalis to speak Urdu as effortlessly as Bengali.

In recent years, Hinduism and its festivals have faced relentless attacks in West Bengal. During Ram Navami celebrations, Muslims targeted Hindus with impunity, yet the TMC penalised Hindu victims while Islamic extremists roamed freely. The TMC's tacit support for Islamists extended to instances where violence was perpetrated against Hindus during Ram Navami, with the Chief Minister sympathising with Muslims and blaming Hindus for their processions in Muslim-dominated areas.

Reports also suggest connections between TMC members and supporters with Islamic extremist groups like Jamaat-e-Islami and Jamaat ul Mujahideen Bangladesh. There is a disturbing trend among some, such as Bangla Pokkho, led by Garga Chatterjee, advocating for a separate United Bengal, akin to the Muslim League's 1947 plan for an independent United Islamic Bengal, a vision still harboured by some of their descendants. The gradual demographic shift through illegal immigration and acquisition of documents has fueled their agenda, aiming to achieve control over Bengal, Assam, and Tripura.

Bangla Pokkho's activities include fostering hatred towards Hindu non-Bengalis working in West Bengal, viewing them as a threat to the Islamist mission. This anti-non-Bengali Hindu sentiment aligns with

Mamata Banerjee, chief minister of West Bengal.

the broader agenda of separating Bengal from India. The Islamists successfully cloak their agenda under the guise of linguistic regionalism, exemplified by Bangla Pokkho in Bengal, reminiscent of Kashmiriyat in Kashmir.

More surprisingly, with absolute TMC knowledge, a Shariah-governed enclave has emerged in a Bengal village, leading to illiteracy and unemployment. Situated in the Muslim-dominated village of Advaitpur in the Murshidabad district of West Bengal, a Fatwa has been issued, prohibiting activities such as lottery participation, music and film consumption on mobile and TV, liquor sale and consumption, carrom playing, and gambling. Offenders face penalties ranging from Rs 500 to Rs 7000, the severity determining the fine. Additionally, those found guilty will be publicly paraded with shaved heads. The Social Reform Committee, led by Azharul Shaikh, has initiated this effort, with rewards offered for information on offenders. Notably, the TMC-backed panchayat head, a Muslim, supports and endorses this Fatwa, portraying a talibani form of governance in the village.

Conclusion

In conclusion, the recent distressing incidents in West Bengal, marked by assaults on Hindu Sadhus and the emergence of Shariah-governed enclaves, reflect a troubling departure from the state's commitment to religious freedom and cultural diversity. This disconcerting trend, rooted in a historical continuum spanning colonial times, the Communist era, and the current TMC government, unveils a persistent strain of anti-Hindu sentiment that has compromised the safety and rights of Hindus in the region.

The erosion of West Bengal's Hindu ethos is particularly disheartening, considering its historical significance as the birthplace of revered saints and a stronghold of the Hindu Bhakti movement. The state, which once echoed with patriotic fervour through Vande Mataram, now faces challenges that cast a shadow over its inclusive spirit.

The present state of affairs paints a grim reality where being a Hindu appears almost criminal, and the safety of Hindus is compromised while perpetrators roam freely. The recent incident of Sadhu lynching in Purulia

is not an isolated event but poses a severe national security threat. Given this, West Bengal's trajectory, despite India's global aspirations to becoming the "Vishwa Guru," seems to be heading towards darkness, haunted by the echoes of historical decisions.

The rising Hinduphobia, exemplified by ominous slogans and a dangerous game involving secular, liberal, and communist Hindus unwittingly, adds a layer of complexity to this narrative. The current socio-political landscape in West Bengal demands a careful examination and concerted efforts to preserve the social fabric of the state.

The recent incident, coupled with the ongoing challenges faced by Hindus in West Bengal, serves as a stark reminder of the critical need to safeguard the religious freedom of the majority community in the region. It emphasises the imperative to undo the concept of convenient secularism and avoid succumbing to vote bank politics and instead prioritising the protection of fundamental rights for all citizens. Addressing these concerns is not just a local issue but holds national significance, aligning with the broader vision of India as a thriving, diverse, and harmonious democracy. **DSA**

REVOLUTIONIZING WARFARE:
THE IMPACT OF BATTLE COMMAND SYSTEMS AND JADC2

The battlefield is a scene of constant chaos. The winner will be the one who controls that chaos, both his own and the enemies
– Napoleon

As warfare technology advances, future wars, as enunciated by watchers, will be contested, and adjudged by the click of a mouse much like a video game, with total systems integration thereby linking collated and analysed data with the decision-making apparatus with command and control, as well as on ground. Battle Command Systems (BCS) is about data networked command information system, real-time situational awareness, shared virtual maps, graphics, command, and control (C2), guided by artificial intelligence, thereby creating an organised decision-making environment, piloting military commanders and troops in a war zone.

BCS is the nerve Centre in military operations on the field as it forms a critical link in the command structure by functioning as the 'brain' of the battle campaigns, powering intelligence-gathering, leading to tactical superiority, as a result expediting the pace of operations and presenting a joint combat know-how. C2 links sensors (e.g., radar) and assets (like missile launchers) through command and control, providing firing positions guided by tracking radar. Command, Control, Communications, Computers (C4) Intelligence, Surveillance and Reconnaissance (ISR), commonly known as C4ISR combines machine learning and AI for intelligent data fusion. Joint intelligence, surveillance, and reconnaissance enhance situational awareness, facilitating informed decisions. Integrated C2 and ISR create a comprehensive umbrella, ensuring secure data communication and complete visibility across forces.

The C4ISR system RACCOS is a mobile command and control system for the Air Defence with the on-the-move or stationary operational capability.

SUMAN SHARMA

The writer is an award-winning defence and foreign policy journalist and a strategic analyst, prior to which she has been an instructor in the Indian Military Academy, Dehradun. Winner of the international Defence Media award-2022, along with CMSB Journalist of the Year 2013 award, she also holds the Limca record and GR8 Women Achievers award for being the world's first woman to do a MiG-35 co-sortie, along with other fighter jets. Cleared her services selection twice for being an Army officer, and also the navy mission selection for National Geographic channel.

> The **battlefield** is a scene of **constant chaos.** The winner will be the one who **controls that chaos,** both his own and **the enemies**

JADC2 addresses urgent challenges and opportunities for the U.S. military and Joint Force in seizing, maintaining, and protecting our information and decision-making advantage over our adversaries.

The US Department of Defense (DoD) has established the Joint All-Domain Command and Control (JADC2), an innovative architecture powered by artificial intelligence. This network seamlessly connects sensors across military services—space, air force, army, marine corps, and navy. Space holds a pivotal role in this integrated domain. The US Space Force, initiated in 2019, underscores the significance of this frontier, while the Russian Space Force, established in 1992, underwent disintegration and subsequent mergers.

Command and Control

According to Rand Corporation's application of strategic analysis based on developed scenarios aimed to guide military and civilian decision- makers, the study affirms the most compelling function of efficient C2 technologies and principles as it does with C4I (command, control, communications, computers, and intelligence). The C2 procedures and mechanisms enhance the dominance over the adversaries with faster and more-acquainted data in a battle zone.

The following examples of NATO allies operating together illustrate

the effectiveness of an integrated C2 in a multinational domain.

Netherlands, Belgium, and Denmark took the initiative to come up with a tri-national command headquarters, the Composite Special Operations Component Command (C-SOCC), which is presently active under NATO's Response Force, besides supporting multinational missions and other NATO operations. Special Operations Force, operating in a multinational context, have had successful missions, owing to this initiative.

NATO allies like Slovenia, Hungary, Croatia, and Slovakia along with partner nation Austria decided to

come under Hungarian leadership for the management of special operations and formed the Regional Special Operations Component Command (R-SOCC), which is a regional deployable headquarters aimed at benefitting regional special operations forces across the alliance. R-SOCC is expected to achieve full operational capability by the end of 2024.

Eight NATO allies, US, UK, Hungary, France, Italy, Portugal, Spain and Denmark have come up with - Command and Control Capability for Surface Based Air and Missile Defence for the Battalion and Brigade Level (SBAMD C2 Layer) to boost interoperability by

enabling procurements and fielding of air defence assets for a layered surface- based air and missile defence approach.

JADC2

The JADC2, a highly sophisticated and networked concept, is still a work in progress by the Joint Staff and the forces, hence the plans for its operationalisation are still far away. JADC2 was. conceptualised for swift decision making, enhancing capabilities of the forces across services in a multidomain environment and to improve. situational awareness. Data, shooters and sensors from all domains are conjoined to function as a unified unit which

Service component commanders of the participating countries of the Regional Special Operations Component Command (R-SOCC) recently held discussions at an event organized by the HDF Joint Special Operations Command in Szolnok, Hungary.

AI-Based Weapon Sensing for JADC2.

The **US Department of Defense (DoD)** has established the **Joint All-Domain Command and Control (JADC2)**, an innovative architecture powered by **artificial intelligence**

powers a coordinated. exercise of authority to integrate, collate, converge and plan in real space. and time. Rand Corporation's study underscores the need for a balanced approach between centralised and decentralised coordination in JADC2 training. It also highlights concerns about the concept's sensitivity and intricate operational nature.

About comparing JADC2 with the Indian concept, former Indian Naval Chief Admiral Karambir Singh (retd) says, "Individual services have command and control systems that are very capable. These systems can talk between services. But we do not yet have an equivalent of JADC2 in India."

Elements of JADC2/BCS

Battle command involves decision-making, regulation, dominance, and adaptation at various formation levels. At the brigade level, it empowers commanders to lead, prioritise, and allocate assets for combat power. JADC2, emphasising data sharing and speed, focuses on five lines of effort: technology, integration with nuclear C2 and C3, modernisation, data sharing, and human interface. Its main goal is to share situational awareness, providing a level virtual mission command for the army, Marine Corps, and Special Operations Forces (SOF).

The Army Battle Command System (ABCS) is a digital C4I meant for the US Army, while JBC-P is a networked battle command information system that facilitates information about the adversary's situational awareness in real time, along with graphics, operational maps and C2 messages. To accomplish missions the battle command aids in translating leadership's decisions into actions by integrating forces and warfighting mechanisms in space and time.

Challenges

Data is the holy grail of any battle command system. After the US intelligence document leaks in the recent past, serious questions about secure data publishing and sharing have come to the fore. Where to release the relevant data and who to give access to, are key issues in front of combat commanders. Sensitive data sharing in an insecure environment is a huge challenge that militaries worldwide seem to be dealing with.

Other factors include delayed acquisition process, owing to bureaucratic red tape citing security reasons, which also dictates choice of vendors, and redundancy. General B Chance Saltzman, the current Chief of US Space operations, has spoken about technical and policy challenges in the JADC2. He has stressed the need to have a common data protocol and also about the ease of integration by lowering the threshold so that smaller firms can participate.

Essentially, JADC2 is a unified concept, requiring a coordinated effort, that has been challenging for the US DoD, as General Mark A Milley, Chairman Joint Chiefs of Staff, according to reports, has stressed on jointmanship, since each service has been developing its own mechanism, reinforcing that wars are fought as a nation and not as individual forces.

NATO C4ISR

C4ISR is an effective tool in NATO's collective decision-making and action, but it has been found short of its required standard of efficacy. and warrants improvement, according to experts. Considering the soaring threats and security challenges in Europe post the Russia-Ukraine conflict, NATO needs to boost its capabilities of decision making, awareness and rapid response in the foreseeable future, by upgrading its C4ISR, which remains under-resourced, a fact that was reinforced at the historic Madrid NATO summit, in June 2022.

The Defense Department's efforts to bring Joint All Domain Command and Control, or JADC2, to the warfighter, will provide a better way to sense, make sense of and act on the volumes of information generated into joint, all-domain warfighting environment.

C4ISR provides state-of-the-art command, control and system integration solutions for Armed Forces around the world.

The **JADC2**, a highly **sophisticated** and **networked** concept, is **still a work in progress** by the **Joint Staff** and the **forces**, hence **the plans** for its **operationalisation** are still far away.

Transatlantic Security Initiative in its latest report in Atlantic Council talks about five crucial steps for decision-makers to upgrade and modernise NATO C4ISR, which are as follows:

- Share more data and intelligence.

- Transform digitally.

- Implement new concepts, policies, and plans to clarify C4ISR requirements.

- Modernise, augment, and acquire capabilities to meet new C4ISR requirements.

- Continue to invest in C4ISR interoperability, readiness, resilience, innovation, and adaptation.

India

The Indian Ministry of Defence (MoD) has initiated 'Project Akash Teer' (Sky Arrow), investing millions in an automated air defence control system. Contracts totaling USD 667 million were awarded to Government-owned manufacturers, Bharat Electronics Limited (BEL) and NewSpace India Limited (NSIL), focusing on the Indian Air Force (IAF) and the Indian Army.

Jayant D Patil, Director with Larsen & Toubro (L&T) a private defence manufacturing firm, says, "Most of such systems have all along remained nominated to defence public sector units (PSUs) on the justification that it is classified, and secrecy reasons don't allow it to be ordered to the private sector. However, in recent years the scenario is changing with complete integrated weapon systems being won by private sector under competitive bidding route."

Under 'Akash Teer,' the initial USD 245 million contract with BEL focuses on acquiring an automated air defence control and reporting system for the Indian Army. The second USD 51 million contract with BEL involves Sarang ESM systems and associated support for the Indian Navy. The third contract, valued

at USD 366 million, with NSIL, pertains to the procurement of the advanced Communication Satellite GSAT 7B. These projects align with the Government's 'Buy Indian' (Indigenously Designed Developed and Manufactured - IDMM) category, emphasising indigenous design, development, and manufacturing. NSIL's advanced communication geostationary satellite, GSAT 7B, will substantially boost the Indian Army's communication capabilities by providing mission-specific, beyond-the-line-of-sight, critical information to frontline troops and formations as well as ground and airborne platforms.

As per the MoD statement, "The above projects will encourage the participation of Indian Electronics and associated industries, including MSMEs, who are sub-vendors of BEL."

Amid the ongoing India-China border standoff in Ladakh since 2020, Indian forces face increased vulnerability to Chinese unmanned attacks, necessitating countermeasures in UAV defence and electronic warfare, where the Indo-US BECA, signed in 2020, has proven pivotal, enabling real-time exchange of highly classified information and empowering the Indian Army to track PLA troop deployments in Ladakh. Strategic experts advocate fostering OODA (Observe, Orient, Decide, Act) through integration with Low Earth Orbit (LEO) satellites for enhanced situational awareness and response capabilities.

IAF's Air Marshal B Suresh (retd) says, "All the ADC2 systems of other services will be integrated with the IACCS of IAF. All terrestrial, airborne, and space-based assets will be networked through operational

data link (ODL). It cannot be compared with the US system, as the software requirement specifications (SRS) may be different."

In a major transformation push the Indian armed forces have been gearing-up for the theaterisation model for enhanced jointness and synergy among the Indian army, IAF and the Indian Navy, a concept which was put forth and actively pursued by India's first Chief of Defence Staff (CDS) late General Bipin Rawat.

Indian Army's Lt-Gen BK Sharma (retd) says, "In this day and age of digitisation of the battlefield, the concept of a unified command and control is required and needs to be expedited all the more since the theatrisation of commands is being pursued."

India procures cutting-edge GSAT 7B satellite to strengthen army's communication capabilities.

Ukrainian servicemen prepare an AN/TWQ-1 Avenger mobile air defence missile system for work during their combat shift, amid Russia's attack on Ukraine, outside of Kyiv, Ukraine June 16, 2023.

> The **Indian Ministry of Defence (MoD)** has initiated **'Project Akashteer' (Sky Arrow)**, investing millions in an automated **air defence control system.**

Recent Conflicts

Armenia-Azerbaijan: With close to 200 main battle tanks lost in the Nagorno-Karabakh region, the recent Armenian-Azerbaijani conflict has exposed the vulnerability of the land forces in front of the hi-tech drone warfare, thereby underlining the need for convergence of an electronic warfare and counter-drone cover, sensors interfacing with space assets to boost real-time communication and visual effectiveness in combat.

Armoured and mechanised assets, which still make for the combat mainstay in today's day and age, their vulnerability as easy targets on ground by the unmanned aerial systems (UAS), can be tackled through an advanced, sophisticated battle command system with elements such as counter-UAS, air defence and electronic warfare.

Russia-Ukraine: As per reports, more recently the Russian military command structure was revamped from being a four-chain command structure (military district – field army – division – regiment) to a three chain structure which included a strategic command – operational command – brigade. The Russia-Ukraine conflict, often described by Russia as a special military operation, is a hybrid war. This war, which will soon enter its third year, is apparently following the new command structure of the Russian military.

With the Russian invasion of Ukraine, the importance of speed in decision making, action of allies and understanding of the security environment have gained center stage more than ever before.

Following Russia's extensive missile use in Ukraine, the US and NATO allies have actively enhanced integrated air and missile defence (IAMD) systems. IAMD involves connecting all radars and shooters to a central command system for efficient coordination against aerial threats.

Israel- Iron Dome: Israel's air defence system against short range rockets called the Iron Dome to intercept incoming rockets on Israeli territory, has had a 90 percent successful kill rate, ever since it was launched in 2007 and became operational in 2011. The Iron Dome basically comprises three components, which are a radar to detect incoming rockets; a command-and-control system that channels that information and an interceptor, which is a missile that destroys the incoming rocket.

Israel's ongoing conflict in Gaza with Hamas highlights a notable use of integrated and coordinated missile defence technology, surpassing previous US engagements in scale and consistency since October 7th. Israel's Iron Dome is replenished by the US under an agreement, whereby billions of dollars come as aid to Israel from Washington. As a security requirement, cleared by the Congress for its indirect fires protection capability (IFPC) program, the US Army acquired two Iron Dome systems in 2019.

Israel has also introduced laser missile defence technology named Iron Beam, although it remains non-operational at present. The existing Iron Dome costs tens of thousands of dollars per interception, while the Iron Beam is estimated to cost merely USD 3.50 per interception.

Private Manufacturers

Thales, the French defence manufacturer boasts of offering hi-tech solutions to military commanders by bringing together a set of elements. making up a sophisticated Command Post.

The HF Wideband, satellite communications, tactical networks, defence cloud, virtual map, cyber range, cyber threat intelligence, sky view, connectivity and cloud, trusted probe, robotics and drones, are some of the tools that Thales affirms makes up for a Command Post system for better interconnected and easy, quick deployable operational command centers and tactical units.

Iron Dome Air Defense System.

Thales and Bharat Dynamics Limited (BDL), a Government of India enterprise, signed a Memorandum of Understanding for setting up manufacturing facilities in India for precision-strike 70mm laser guided rockets (FZ275 LGR).

Thales' Syracuse is a secure telecommunications satellite program, facilitating 24/7 military communications for deployed units. The newest iteration, Syracuse IV, is now in the induction phase within the French Navy.

The defence cloud is the solution for bringing together heterogeneous data from different sources and correlating and merging it in order to extract operational value. About Nexium Defense Cloud, Mathias Hary, Defence Cloud Product Line Manager at Thales, says, "Our modular infrastructure solution that is adapted to the security and resilience needs of the defence sector, is now being integrated into accredited systems at 'secret' levels and beyond in France and within NATO."

Thales is revolutionising land forces' mission planning and briefing with the Virtual Map, replacing traditional sandboxes and maps. Linked directly to the C2 or Battle Management System (BMS), it imports tactical data and exports mission preparation results. Marc Darmon, Thales' EVP of Secure Communications and Information Systems, discusses Astride 3, a deployable, high-speed, secure communications network for the French military, emphasizing its role in collaborative combat and positioning connectivity at the core of high-intensity warfare. Meanwhile, Northrop Grumman delivers its Integrated Air and Missile Defence Battle Command System, showcasing JADC2 capabilities as part of the US Army's Project Convergence, including operations in Poland.

As we navigate the rapidly evolving landscape of modern warfare, the integration of cutting-edge technologies in Battle Command Systems (BCS) and initiatives like the Joint All-Domain Command and Control (JADC2) emerges as a pivotal force. The visual orchestration of interconnected networks, AI-driven decision-making, and collaborative efforts among international allies redefine military strategies. As showcased by recent conflicts, the vulnerability of traditional forces underscores the critical importance of advanced systems in countering emerging threats. The contributions of private sector innovators and ongoing efforts to address challenges in secure data sharing further emphasize the dynamic nature of military operations in the digital age. In this era of warfare evolution, the quest for strategic dominance continues to drive nations towards investing in state-of-the-art technologies and fostering international collaboration for enhanced global security. DSA

14 YEARS OF STRATEGIC SAGA

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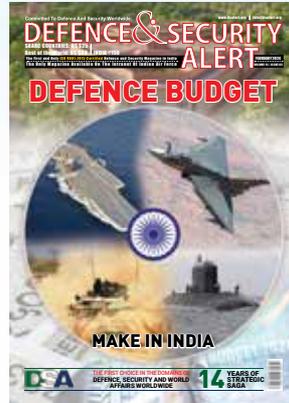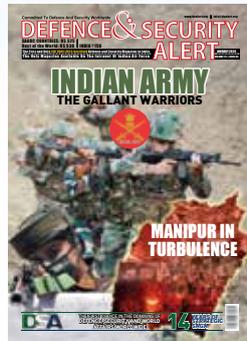
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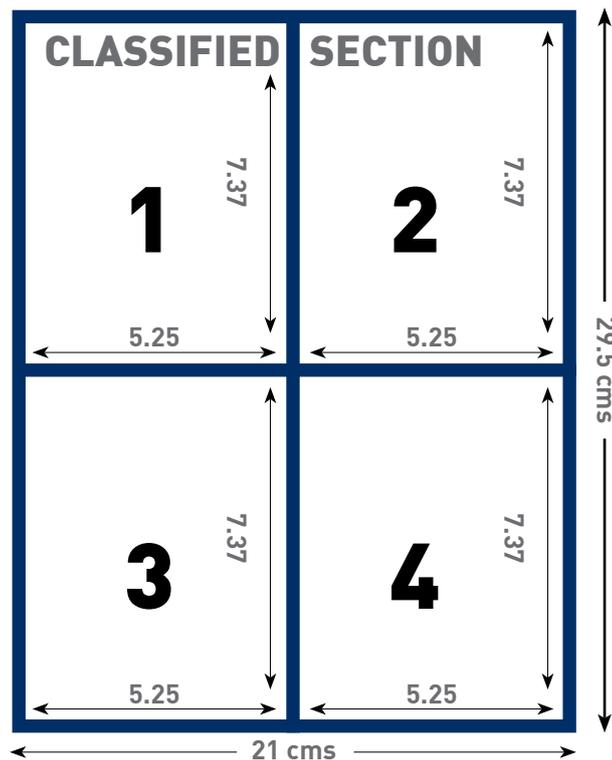
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