

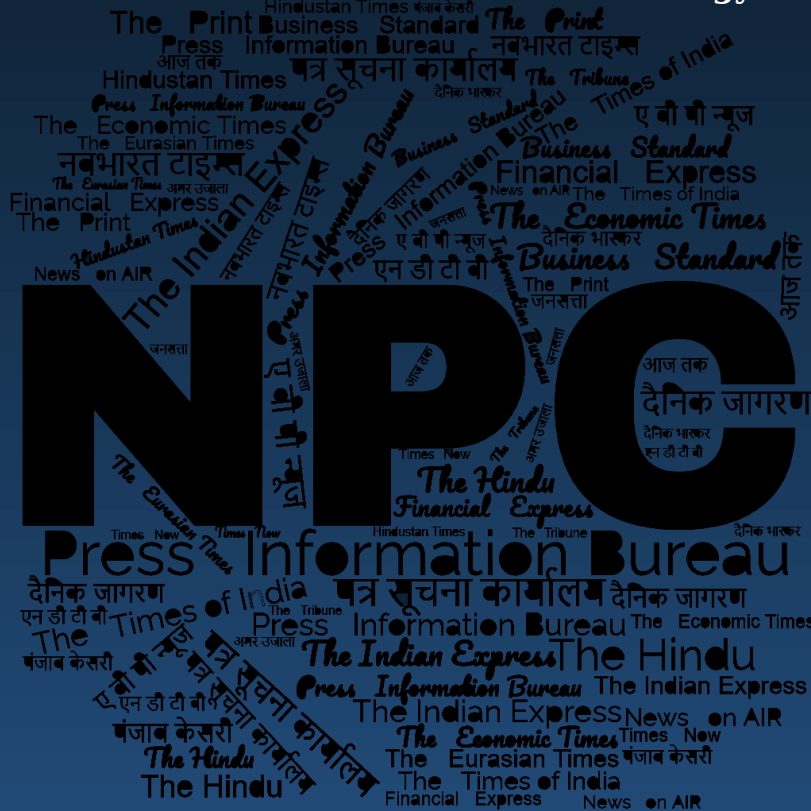
अप्रैल  
Apr  
2024

खंड/Vol. : 49 अंक/Issue : 77  
25/04/2024

# समाचार पत्रों से चयित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

**A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology**



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## **DRDO Develops India's Lightest Bulletproof Jacket for Protection against Highest Threat Level | Details**

The Defence Research and Development Organisation or DRDO has developed India's lightest bullet proof jacket for protection against highest threat level 6 of BIS. Its unit, Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur, the DRDO has created the jacket for protection against 7.62 x 54 R API (Level 6 of BIS 17051) ammunition. The bulletproof jacket can stop six bullets.

"DMSRDE, Kanpur has successfully developed indigenous light weight Bullet Proof Jacket( BPJ) for protection against highest threat level 6 of BIS. This is the first of its kind in monolithic ceramic which can stop 6 7.62x54 API bullets @DefenceMinIndia @SpokespersonMoD," posted DRDO on X(formerly Twitter).

According to the Ministry of Defence, the bulletproof jacket was successfully tested at Terminal Ballistics Research Laboratory (TBRL), Chandigarh as per BIS 17051-2018. The jacket has adopted a new design approach, where novel material along with new processes have been used in its development.

The Department of Defence R&D secretary and DRDO chairman has congratulated DMSRDE for the successful development of this bulletproof jacket.

### **More details about the bullet proof jacket**

The front Hard Armour Panel (HAP) of the jacket defeats multiple hits (06 shots) of 7.62 x 54 R API (Sniper rounds) in both ICW (In-conjunction with) and Standalone design.

The ergonomically designed front HAP is made up of monolithic ceramic plate with polymer backing which enhances the wearability and comfort during the operation. The areal density of ICW Hard Armour Panel (HAP) and standalone HAP is less than 40 kg/m<sup>2</sup> and 43 kg/m<sup>2</sup> respectively.

### **A brief history of bullet proof jackets**

Bullet proof jackets are meant to protect the wearer's torso against bullets. Bullet proof jackets were first extensively developed during World War II, they consisted of overlapping plates of steel, aluminum, or bonded fibreglass attached within a nylon garment to protect the wearer.

Modern day bullet proof jackets are usually made of a variety of materials like kevlar, steel, polyethylene (PE) or ceramic.

<https://www.hindustantimes.com/india-news/drdo-develops-indias-lightest-bulletproof-jacket-for-protection-against-highest-threat-level-details-101713936721427.html>



**Press Information Bureau**  
Government of India

**Ministry of Defence**

*Wed, 24 Apr 2024*

## **Defence Secretary-led Indian Delegation to Attend SCO Defence Ministers' Meeting in Kazakhstan**

Defence Secretary Shri Giridhar Aramane is leading the Indian delegation to Astana, Kazakhstan from April 25-26, 2024 for the Annual Meeting of the Defence Ministers' of Shanghai Cooperation Organisation (SCO) Member States. The meeting will review the regional security issues within the SCO, including the defence cooperation initiatives.

The Defence Secretary will deliver the India statement at the ministerial meeting. He will also hold meetings with Defence Ministers of the friendly countries of the SCO to discuss issues of bilateral defence cooperation.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018769>



**Press Information Bureau**  
Government of India

**Ministry of Defence**

*Wed, 24 Apr 2024*

## **Indian Army Conducts a Seminar cum Exhibition on Theme “Year of Tech Absorption, Empowering the Soldier”**

A seminar cum exhibition was conducted today by the Indian Army on the theme “Year of Technology Absorption - Empowering the Soldier”. The event was conducted by the Centre for Land Warfare Studies (CLAWS), on behalf of the Indian Army in Manekshaw Centre.

The seminar brought together technology experts and industry professionals to deliberate on the adoption of modern technologies like Artificial Intelligence and advanced hardware in the military domain. It aimed at fostering a collaborative environment for academia and the defence industry to fast-track the ongoing initiatives for technological absorption in the military.

The event commenced with an inaugural address by General Manoj Pande, Chief of the Army Staff (COAS). Keynote Address was delivered by Dr Chintan Vaishnav, Mission Director, Atal

Innovation Mission (AIM, NITI AAYOG). This was followed by an exhibition, demonstrating the progress and capabilities of India's Defence Sector.

The COAS underscored the vital need of being self-reliant in warfighting platforms and systems besides achieving self-sufficiency in critical technologies through indigenous Research & Development. He emphasised that the Technology has emerged as the new strategic arena of competition which drives geo-political powerplay. He also said that technology is being leveraged for weaponisation of varied domains, ranging from Information to Supply Chains. Citing examples from recent conflicts, he mentioned that disruptive and dual use technologies are proliferating at unprecedented scale and transforming the Character of Modern Wars. He mentioned that a suite of digital technologies encompassing Electronic Warfare, Micro-electronics, Drones, Precision Attack Systems, Loiter Munitions and Star-link Terminals are challenging traditional force multipliers.

The COAS reiterated the commitment of Indian Army to continue its pursuit towards transitioning into a modern, agile, adaptive and technology enabled future ready force. He urged all stakeholders, the Services, Industry Partners, Start-Ups, Research & Development institutions, Academia and Policy Makers to synergise their efforts and develop a vibrant national defence ecosystem.

The seminar was conducted in three sessions, with first session focussed on "Contemporary Technology and Industry Capabilities". The session was moderated by Lieutenant General Vineet Gaur, Director General Capability Development and the speakers were eminent personalities from academia and industry such as Prof Mayank Vatsa (IIT Jodhpur), Dr Mandira Majumder, Shri Rajiv Mehrotra, Shri Vaibhav Gupta, and Colonel Karandeep Singh (Retired). This session analysed the emerging role of the Indian Defence Industry in strengthening of overall defence architecture. The speakers also deliberated upon the technology developed so far and future roadmap to build cutting-edge technologies for military usages.

The second session was moderated by Lieutenant General Subrata Saha (Retired) and focussed on "Empowering Soldiers: Amplifying Impact Through Modern Technologies". Major General Sunil Mehrotra from Signals Directorate and Shri SB Taneja from DRDO examined options to leverage present and next-generation technologies to enhance the capabilities of Indian Army. Looking beyond the domain of land, this session analysed the role of space and cyber domains in the present context and future scenarios.

The final session on "Maximising Technology Effectiveness & Soldier Preparedness" was moderated by Lieutenant General PR Shankar (Retired). The speakers were Lieutenant General Rajesh Pant (Retired), Mr Geo George Philip, Dr K Mohanavelu, and Major General Ajay Sharma. The participants brainstormed wide-ranging options ranging from military applications of cyberspace, impact of drones and satellites on the modern battlefield, besides delving upon hardware and software options to empower soldiers.

The seminar culminated with closing remarks by Lieutenant General Tarun Kumar Aich, Deputy Chief of the Army Staff (Strategy). Reflecting positive thoughts on impressive trajectory of Indian Army's transformation, he reiterated that adoption of niche technology in tandem with agile doctrinal reforms is extremely crucial. He also stated that Indian Army will continue to foster a spirit of collaboration with the industry and academia to empower the soldiers.

The proceedings underscored the importance of technology absorption in empowering soldiers besides providing a snapshot of available solutions and highlighted the contributions of the Indian Defence Industry, delineating their strengths, future trajectories, and their pivotal role in ensuring future ready armed forces.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018729>

## **Technology Emerged as New Strategic Arena of Competition: Army Chief Manoj Pande**

Evolution of technology has impacted warfare but technological advantage may just be reduced to a tactical level when it is taken away from the larger strategic context and regarded as the "sole driver" of success in a war, Army Chief General Manoj Pande said on Wednesday. In his address at a seminar here, he also said technologies are emerging in new uncharted domains, and "revolutionising and establishing a 'new normal' in different fields".

Gen Pande further said technology has also emerged as the "new strategic arena of competition, driving geo-political powerplays and is being leveraged for weaponisation of many domains, ranging from information to supply chains".

The Army chief was addressing a gathering during a seminar on "Year of Technology Absorption: Empowering the Soldier" organised by a defence think-tank at Manekshaw Centre at Delhi Cantonment.

Technology from a warfighting perspective, has undergone significant evolution over the centuries, and has "impacted warfare in a profound manner," he said.

Gen Pande cited the examples of rifles, railroads, telegraphs and ironclad ships in the 19th-century wars; the machine gun, tank, aeroplane, aircraft carriers and atomic weapons in the 20th-century wars; to the niche technologies that have today permeated into the military domain.

They "all highlight examples of how technologies change the face of wars and influence their outcomes", he said.

History shows that armies that have managed to adopt and integrate new technologies have gained advantage on the battlefield and achieved success, he underlined.

Infusion of technologies such as computers, radars, code-breaking and aircraft production by the Allies in World War II was instrumental in securing victory for them, while in the early years of the War, it was Germany and Japan which leveraged their industrial and technological capacities to "accrue advantages of scale", over the Allies, the Army chief added.

"On the other hand, technological advantage may just be reduced to a tactical level, when it is taken away from the larger strategic context and regarded as the sole driver of success in war. Vietnam and Afghanistan are examples of the same," he asserted.

"Therefore, understanding of new technologies, harnessing their potential and accruing strategic superiority -- is the essence of leveraging technology from a warfighting perspective," the Army chief said.

The Indian Army is observing 2024 as the 'Year of Technology Absorption'.

The Army chief dwelled on the ethos of 'atmanirbharta' that the force is seeking to augment and further achieve in line with the government's vision of self-reliance in defence.

"Technologies continue to evolve. These are emerging in new uncharted domains, are revolutionising and establishing a 'new normal' in different fields, are interconnected to one another in different disciplines and are commercially available," he said.

The military-technological landscape today is witness to a "manifold increase in the lethality and accuracy of kinetic instruments and increased proliferation of technologies" such as artificial intelligence, quantum computing, robotics, 3D printing and nanotechnology, the Army chief said.

He reiterated that emerging technologies are no longer superpower-centric and even non-state actors are gaining access to modern technology, for military use and employing it for "asymmetric leverage in conflict".

He cited how recent conflicts have brought to the fore significant insights on how disruptive and dual-use technologies and their proliferation at unprecedented scale -- are transforming the character of modern wars.

A suite of digital technologies -- encompassing electronic warfare, micro-electronics, drones, precision attack systems, loiter munitions and star link terminals -- are "challenging traditional force multipliers," he added.

"Swarming is contesting surging, surveillance and precision are scoring over fire and manoeuvre, and the light and small are prevailing over the large and heavy. Conventional force ratios which were the measure of military strength and superiority, in the past, today stand blunted," Gen Pande added.

The battlefield effect rendered by disruptive technology-driven systems mandates new predictive models to assess combat potential superiority, he asserted.

Warfare has transcended into new domains, such as space, cyber, electromagnetic spectrum and information. The scope of grey zone warfare too, has "enhanced" due to technological advancements.

Consequent to these developments, the battle space has become "more complex, contested and lethal, and shall remain so in the future," the Army chief said.

The impact of external dependency on critical components, supply chain disruptions and "weaponisation of denial regimes" came to the fore, during the pandemic and also from the lessons of the ongoing Russia-Ukraine conflict, he said.

"We need to recognise that, even if we were to import some warfighting systems, no country will share the latest, advanced and critical technology. Being import-dependent for critical technologies hence entails the risk of remaining one technological cycle behind, in niche areas," the Army chief said.

Therefore, the need to be self-reliant in warfighting platforms and systems and achieving self-sufficiency in critical technologies through indigenous research and development, is an "imperative", he added.

Doctrinal adaptation, consequent to technology adoption, is an imperative. We need to tailor our doctrines and strategies to the prevalent operational paradigm. Refining operational philosophies, concepts of employment and tactics, commensurate to the combat effects that accrue from new technologies, is important -- to maximise the battlefield potential of modern weapon systems," he said.

This shall remain an ongoing process, he added.

<https://economictimes.indiatimes.com/news/defence/technology-emerged-as-new-strategic-arena-of-competition-army-chief-manoj-pande/articleshow/109559063.cms>



# Defence Spending Shoots up as Conflicts Rise Globally: What it Means for India and its Security

*By Air Marshal Anil Chopra*

As Ukraine and West Asia remain in active conflict and countries in Europe, East Asia, and also South Asia continue to feel threatened, global military expenditure is expected to continue to rise. Many states announced record military expenditure increases in the last year. The significant increases reflect high security concerns and the need for improving military strength and deterrence. The Stockholm International Peace Research Institute (SIPRI) has begun releasing data for the year gone by.

India remains among the highly threatened nations. It has two nuclear-armed neighbours, and with both, it has had serious boundary disputes and fought wars. Yet, the emerging global power has maintained a balance between military spending and developmental expenditure. The figures showcase global tensions and hotspots.

## **Global defence expenditure 2023**

Total global military expenditure reached an all-time high of \$2443 billion in 2023, an increase of 6.8 per cent in real terms from 2022. This was the steepest year-on-year increase since 2009. The 10 largest spenders in 2023 were led by the United States, China, and Russia, all of whom increased their military spending.

It was the ninth consecutive year of a rise in military spending. Also, it was the first time since 2009 that military expenditure went up in all five of the geographical regions. Particularly large increases were seen in Europe, Asia, Oceania, and West Asia. Clearly, there is a deterioration in peace and security. As the states prioritise military expenditure and strength, there is a risk of a spiral effect in the neighbourhood.

## **Russia-Ukraine dynamics**

Russia's military spending increased by 24 per cent to an estimated \$109 billion in 2023, marking a 57 per cent rise since 2014, the year that Russia annexed Crimea. The Russian 2023 military expenditure was 16 per cent of total government spending and 5.9 per cent of GDP.

Russia's military and war-related spending is set to rise sharply in 2024 under new federal budget plans for 2024–26 signed into law by President Vladimir Putin in November 2023. The plans suggest that the Russian government is committed to pursuing the war to a successful conclusion. Some have questioned the economic assumptions, though. Russia's rising debt burden has also meant reduced allocations to some key social spending, including housing, education, and healthcare.

Ukraine was the 8th largest military spender in 2023. Yearly spending surged 51 per cent to reach \$64.8 billion. It represented 58 per cent of total government annual spending. Interestingly, this spending was 59 per cent of Russia's defence expenditure. Ukraine also received at least \$35 billion in military aid during the year, including \$25.4 billion from the USA. When combining the two, it became 91 per cent of Russian spending.

## **NATO defence expenditure**



The US remains NATO's major spender, but European members have increased their share. In 2023, the 31 NATO members accounted for \$1,341 billion, equal to 55 per cent of the global military expenditure. The US' military spending rose by 2.3 per cent and reached \$916 billion in 2023. This was 68 per cent of NATO's total military spending. European NATO members increased their military expenditure, and their combined share was now 28 per cent of NATO, the highest in a decade. The remaining 4 per cent was from Canada and Turkey.

The perception in Europe is that Putin is strong, autocratic, and ambitious, and the war in Ukraine has brought the Russian threat closer to NATO. The US has been asking Europeans to take greater charge of their security. After all, the US has to concentrate a little more on Chinese expansion and bolster security in the Indo-Pacific.

Nearly a decade ago, European NATO members had formally committed to target spending 2 per cent of GDP on the military. As many as 11 out of 31 NATO members actually hit or crossed the 2 per cent level in 2023, the highest number since the commitment was made. Another target set by NATO was that at least 20 per cent of military spending be towards 'Capital' expenditure for new equipment. This was met by 28 NATO members in 2023, up from 7 in 2014.

### **China and its threatened neighbours**

China's military rise is the most watched and analysed subject globally. The US and China's neighbourhood, especially India, Japan, South Korea, and the Philippines, monitor all military power projection-related activities in China.

There is a general belief that China spends around 40 per cent outside the formal military budget under other code-heads that directly contribute to military power. All the neighbouring countries increased their defence budgets to reduce the growing military power gap with China.

China continues to be the world's second-largest military spender. The official military budget was estimated at \$296 billion for the military in 2023. It was an increase of 6 per cent from 2022. It was 29th consecutive year-on-year rise. China's was half of the total military spending across the Asia and Oceania region.

Japan's 2023 defence budget was \$50.2 billion, an 11 per cent increase over 2022. Japan shed its pacifist approach last year. It is re-looking at Article 9 (enacted in 1947) of their constitution that forbids offensive weapons. It plans to increase its defence budget further and bring it up to 2 per cent of GDP by 2027. Taiwan's military expenditure also grew by 11 per cent, reaching \$16.6 billion.

During the same period, Pakistan's military spending dropped to \$8.5 billion in 2023, relegating it to the 30th position globally. While it represented a nominal 19.5 per cent increase over the revised allocation for 2022–23, the gains were offset by severe economic challenges, including the falling value of Pakistan's currency and high inflation, which was close to 21 per cent.

### **Conflict-ridden West Asia**

War and tensions in West Asia for decades have kept defence budgets rising. Military expenditure in the region increased by 9 per cent to \$200 billion in 2023. They saw the highest percentage increase in the last decade. Saudi Arabia was the fifth-largest spender in the world and the highest in the region, with spending increasing 4.3 per cent from the year prior to \$75.8 billion in 2023.

Iran was the 4th largest military spender in the region in 2023, with \$10.3 billion. The share of military allocation to the Islamic Revolutionary Guard Corps (defenders of the faith and the regime) grew from 27 per cent to 37 per cent between 2019 and 2023.

Israel's military spending was the second-largest in the region after Saudi Arabia. It grew by 24 per cent to \$27.5 billion in 2023. It was driven by Israel's large-scale offensive in Gaza in response to

the October 2023 Hamas attack. From the warming of diplomatic relations between Israel and several Arab countries in recent years to the new hostilities with Iran-backed three 'H', Hamas, Hezbollah and Houthis brought in new dynamics.

### **Miscellaneous defence budget increases**

The largest percentage increase in military spending by any country in 2023 was by the Democratic Republic of the Congo (105 per cent), due protracted internal strife. South Sudan recorded the second-largest percentage increase (78 per cent) amid the Sudanese civil war. Poland's military spending, the 14th highest in the world, was \$31.6 billion and grew 75 per cent in one year, the largest annual increase by any European country. The spillover of the Ukrainian war threat was the cause.

Algeria's military spending grew by 76 per cent to reach \$18.3 billion, the highest ever, largely due to a sharp rise in revenue from gas exports to Europe, which lost Russian supplies. Mexico's military expenditure was \$11.8 billion in 2023, a 1.5 per cent decrease from 2022. In 2023, Brazil's military spending increased by 3.1 per cent to \$22.9 billion and stood at 1.1 per cent of GDP. Brazil is considering a constitutional amendment to mandate a minimum of 2 per cent of GDP defence budgeting.

### **Weapons demand grows, but production lags**

The US continues to dominate the top defence manufacturing companies. There are six American, three Chinese, and one British among the top 10 defence contractors. China accounted for the second-largest share of combined Top 100 arms revenues by country, at 18 per cent. The Ukraine and West Asian conflicts have greatly increased weapon systems and munitions demands.

However, despite receiving new orders, many US and European arms companies could not significantly ramp up production capacity because of labour shortages, soaring costs, and supply chain disruptions that were exacerbated by the ongoing wars. Relatively smaller suppliers like Germany, Norway, Iran, Turkey, Poland, and North Korea had to step in. Of course, countries like Israel and South Korea are known to maintain high stocks and surge production capacities.

European arms imports nearly doubled, US and French exports rose, and Russian exports fell sharply. Around 55 per cent of arms imports by European states in 2019–23 were supplied by the US, up from 35 per cent in 2014–18.

The US' share of total global arms exports rose from 34 per cent to 42 per cent. France's arms exports increased by 47 per cent between 2014–18 and 2019–23, and for the first time, it was the second biggest arms exporter, just ahead of Russia.

The largest share of global arms transfers goes to Asia, with India among the world's top arms importers. For the first time in 25 years, the US was the largest arms supplier to Asia and Oceania. The US accounted for 34 per cent of arms imports by states in the region, compared with Russia's 19 per cent and China's 13 per cent. The USA accounted for 69 per cent and Germany for 30 per cent of arms imports by Israel. Pakistan was the fifth largest arms importer in 2019–23, and China became even more dominant as its main supplier, providing 82 per cent of its arms imports.

Interestingly, India's defence exports have reached a level of ₹21,083 crore (\$2.6 billion) in the financial year 2023–24, which is a spectacular growth of 32.5 per cent over the previous fiscal.

### **India's defence budgeting and way ahead**

Chinese and Indian troops, the two largest armies by numbers, have been facing eyeball-to-eyeball on the Line of Actual Control (LAC) for nearly four years now.

The negotiations are on to ease border tensions. The two sides have held 21 rounds of military talks to resolve outstanding problems, but more ground needs to be covered.

India is the fourth most powerful military force. India is also the fourth largest military spender in 2023. The defence budget for 2024–25 is only an interim one due to ongoing elections. In February 2024, India's interim budget gave a very marginal 4.72 per cent increase over last year's budget estimates, and it amounted to only a 0.37 per cent increase over revised estimates. The figures may go up when the full budget is presented later in the year.

At \$83.6 billion, its 2023 military expenditure was just 4.2 per cent higher than in 2022. It constituted 13.18 per cent of the central government's expenditure. It was 1.46 per cent of GDP. Capital allocations for modernisation and infrastructure development were 27 per cent of the total and saw an increase of 6.7 per cent.

Nearly 75 per cent of Capital purchases have to 'Made-in-India'. There was a 43 per cent increase in the capital budget of the Border Roads Organisation (BRO) to build up infrastructure along LAC. The DRDO saw an increase of 9 per cent for defence Research & Development (R&D).

India needs to spend much more on R&D to have intellectual property of its own. Aero-engine, hypersonic, electronic warfare, directed energy weapons, AI, uncrewed systems, drones, robotics, quantum, long-range missiles, cyber, and space are some of the major areas. Jump-starting may not be easy. Partnerships with friendly foreign countries are perhaps the best way. Prime Minister Narendra Modi has had one-on-one meetings with CEOs of all the top technology companies and has invited them to work with India.

Ongoing conflict has clearly brought out the fact that wars will not be short and swift. Despite being the fourth-most powerful nation, the power index gap with China remains very significant. India has a numbers and modernisation backlog.

India, which is short of 11 fighter squadrons, needs much more helicopters, especially attack variants. India needs more submarines, warships, tanks, artillery guns, and unmanned systems. India must also take the call on the next aircraft carrier. The importance of air defence systems has been underscored. It has to build up ammunition stocks. Clearly, the Indian military has to grow, and allocations must increase according to threat perception.

<https://www.firstpost.com/opinion/defence-spending-shoots-up-as-conflicts-rise-globally-what-it-means-for-india-and-its-security-13763219.html>

## Business Standard

Wed, 24 Apr 2024

### **Top US, Chinese Naval Officials Discuss Challenges in Indo-Pacific Region**

Top US and Chinese naval officials held a rare meeting in China on Wednesday amid the growing tensions over Taiwan and the South China Sea and discussed the increasing security challenges" in the Indo-Pacific region.

Admiral Stephen Koehler, commander of the US Pacific Fleet, met Admiral Yuan Huazhi, political commissar of the People's Liberation Army Navy, (PLAN) on the sidelines of the 19th Western Pacific Naval Symposium being organised by the Chinese navy at the coastal city of Qingdao.

Koehler met Yuan to discuss increasing security challenges in the Indo-Pacific, a statement from the US Pacific Fleet, which provides naval forces to the Indo-Pacific Command, said. Two days earlier, Koehler had met the commander of China's navy, Admiral Hu Zhongming, according to the statement. In meetings with Chinese People's Liberation Army (PLA) officials, Koehler discussed

the importance of maintaining open lines of communication, operational safety and regional security concerns, the Hong Kong-based South China Morning Post quoted the statement as saying.

The bilateral talks came after a series of senior-level talks between the two militaries, including the most recent between US Defence Secretary Lloyd Austin and Chinese Defence Minister Dong Jun.

The meetings took place alongside the symposium hosted by China and attended by 29 countries, including representatives from rivals Russia and the US.

The talks between Chinese and American naval took place against the backdrop of intensified clashes between China and the Philippines in the disputed South China Sea where they have overlapping territorial disputes.

The Philippines, backed by the US, has been trying to assert its claims over the South China Sea based on the 2016 ruling by a tribunal of the UN Convention of Law of Seas (UNCLOS) endorsing its rights.

China has boycotted the tribunal and rejected its findings.

China claims most of the South China Sea. The Philippines, Vietnam, Malaysia, Brunei and Taiwan have counterclaims.

The meeting between the top US and Chinese officials took place as US Secretary of State Antony Blinken arrived in China to hold talks with the Chinese leadership on a host of issues exacerbating tensions between Washington and Beijing.

Blinken arrived in Shanghai hours after the US Senate approved an aid package bill setting aside USD 8 billion to counter Chinese threats in Taiwan and the broader Indo-Pacific takeover of China's popular social media TikTok.

China, which claims Taiwan as part of its mainland, has been sharply critical of the US assistance to Taipei and expressed its strong opposition to Washington's efforts to force TikTok's sale.

The US is also accusing China of military assistance to Russia, allowing Moscow to largely reconstitute its defence industrial base, affecting not only the war in Ukraine but posing a threat to broader European security. However, China denies any military assistance to Russia.

[https://www.business-standard.com/external-affairs-defence-security/news/top-us-chinese-naval-officials-discuss-challenges-in-indo-pacific-region-124042400917\\_1.html](https://www.business-standard.com/external-affairs-defence-security/news/top-us-chinese-naval-officials-discuss-challenges-in-indo-pacific-region-124042400917_1.html)



Wed, 24 Apr 2024

## **North Korea Hacking Teams Hack South Korea Defence Companies**

Major North Korean hacking groups have mounted "all-out" cyber attacks against South Korean defence companies for more than a year, breaching the firms' internal networks and stealing technical data, South Korea's police said on Tuesday.

Hacking teams linked to North Korea's intelligence apparatus and known as Lazarus, Kimsuky and Andariel planted malicious codes in data systems of the defence companies either directly or through contractors working with them, the police said.

The police, working with a team of national spy agency and private sector experts, traced the hacks to the groups, identifying them by the source IP addresses, the re-routing architecture of the signals and the signatures of the malwares used, it said.

In a case that began in November 2022, the hackers planted a code in the company's public network which then infected its intranet when the security program protecting the internal system was temporarily disengaged for a network test, it said.

The hackers also took advantage of the simple security lapse by employees at subcontractors who used the same passcodes for their private and official email accounts, breaching defence company networks and extracting confidential technical data.

The police did not name the companies that have been hacked or the nature of the data breached.

South Korea has emerged as a major global defence exporter, with contracts signed in recent years to sell mechanised howitzers, tanks and fighter jets valued at billions of dollars.

North Korean hacking groups have infiltrated the systems of South Korean financial institutions and news outlets, foreign defence companies, and, in a major security breach in 2014, into South Korea's nuclear power operator.

North Korean hackers are believed to be behind major cryptocurrency thefts, with the stolen funds being channelled to its weapons programmes.

North Korea denies involvement in hacking operations or crypto heists.

<https://ciso.economictimes.indiatimes.com/news/cybercrime-fraud/north-korea-hacking-teams-hack-south-korea-defence-companies/109551432>

## Science & Technology News



**Press Information Bureau**  
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*Wed, 24 Apr 2024*

### **Technology Development Board -Department of Science & Technology Empowers Indigenous Space Innovation: Funding M/s Dhruva Space's Solar Array Project"**

**"M/s Dhruva Space's endeavor aligns with TDB's mission to promote indigenous innovation in space engineering." - Secretary, TDB**

As a significant step towards indigenization in the space sector and aligning with its mission of advancing indigenous capabilities, The Technology Development Board (TDB) is proud to announce its financial support for the project titled "Space Grade Solar Array Fabrication and Test Facility" by M/s Dhruva Space Private Limited, Hyderabad. TDB has sanctioned financial

assistance for this space startup, demonstrating its confidence in the project's potential to drive technological advancements in the space industry.

With TDB's backing, Dhruva Space is undertaking an ambitious initiative to develop and commercialize space-grade solar array fabrication and testing processes tailored for spacecraft applications. The primary objective of this project is to pioneer technological innovations in solar panel manufacturing to meet the rigorous demands of on-orbit usage.

The project entails several key innovations, including the adoption of new materials like carbon fiber and resins for substrate-side IP to enhance performance and durability. It also focuses on process innovations in solar cell assembly (SCA) through novel stringing and bonding techniques. Dhruva Space aims to manufacture high-efficiency solar panels using triple-junction GaAs technology, targeting an efficiency of up to 30%. Additionally, a specialized test facility will be developed to ensure compliance and certification of space-grade solar arrays.

Furthermore, the project encompasses a series of space-qualified processes, including substrate fabrication, precise cell welding, secure cell bonding, integration of electrical harnesses, and comprehensive testing and evaluation. Mechanical tests will cover vibration, shock, and full-panel assessments, while electrical evaluations will utilize a Large Area Pulsed Sun Simulator for thorough testing. Environmental testing will include thermo-vacuum chamber conditions and acoustic testing, with zero-gravity (Zero G) deployment simulations to assess performance in space environments.

Sh. Rajesh Kumar Pathak, Secretary, Technology Development Board, expressed enthusiasm about the initiative, stating, "We are excited to support M/s Dhruva Space in their endeavor to develop cutting-edge space-grade solar array technologies. This project perfectly aligns with TDB's mission to promote indigenous innovation and strengthen India's capabilities in domestic production, furthering India's commitment to becoming a global hub for advanced and cost-effective space technologies."

Shri Sanjay Nekkanti, CEO, Dhruva Space, said, "One of the crucial product offerings at Dhruva Space is the end-to-end design, engineering, assembly, integration, and testing of spacecraft solar arrays for manned and unmanned space programs. One of our core capabilities has been to supply space power solutions to large satellites as well, and we are thankful to the Technology Development Board, Department of Science & Technology, for enabling us to scale these capabilities where we have seen traction not just in India but also overseas."

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018758>



*Wed, 24 Apr 2024*

## **ISRO Chairman to Host Session on Instagram on April 27**

ISRO Chairman S. Somanath will host a live session on the space agency's Instagram account @isro.dos on Saturday from 6 p.m. to 7 p.m. He would answer selected questions from the participants.

Students, enthusiasts, and start-ups are invited to submit their questions to Chairman ISRO or ISRO's X (post using the hashtag #asksomanathisro) or FB or YouTube handles (DM or comment).



ISRO said Mr. Somanath will provide insights and guidance for students interested in pursuing careers in science, engineering, and technology. Questions related to science, space science, and technology, astronomy, space programmes, science or education policies etc. are welcome, the space agency said.

<https://www.thehindu.com/news/cities/bangalore/isro-chairman-to-host-session-on-instagram-on-april-27/article68101895.ece>



Wed, 24 Apr 2024

## **Against all Odds! Japan's Moon Lander Defies Expectations, Thriving after 3 weeks in Lunar Darkness**

Japan's first moon lander has survived a third freezing lunar night, Japan's space agency said Wednesday after receiving an image from the device three months after it landed on the moon.

The Japan Aerospace Exploration Agency said the lunar probe responded to a signal from the earth Tuesday night, confirming it has survived another weekslong lunar night.

Temperatures can fall to minus 170 degrees Celsius (minus 274 degrees Fahrenheit) during a lunar night, and rise to around 100 Celsius (212 Fahrenheit) during a lunar day.

The probe, Smart Lander for Investigating Moon, or SLIM, reached the lunar surface on Jan. 20, making Japan the fifth country to successfully place a probe on the moon. SLIM on Jan. 20 landed the wrong way up with its solar panels initially unable to see the sun, and had to be turned off within hours, but powered on when the sun rose eight days later.

SLIM, which was tasked with testing Japan's pinpoint landing technology and collecting geological data and images, was not designed to survive lunar nights.

JAXA said on the social media platform X that SLIM's key functions are still working despite repeated harsh cycles of temperature changes. The agency said it plans to closely monitor the lander's deterioration.

Scientists are hoping to find clues about the origin of the moon by the comparing mineral compositions of moon rocks and those of Earth.

The message from SLIM came days after NASA restored contact with Voyager 1, the farthest space probe from earth, which had been sending garbled data back to earth for months.

An U.S. lunar probe developed by a private space company announced termination of its operation a month after its February landing, while an Indian moon lander failed to establish communication after touchdown in 2023.

<https://www.livemint.com/science/news/japans-moon-lander-defies-expectations-thriving-after-3-weeks-in-lunar-darkness-11713947622475.html>



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