

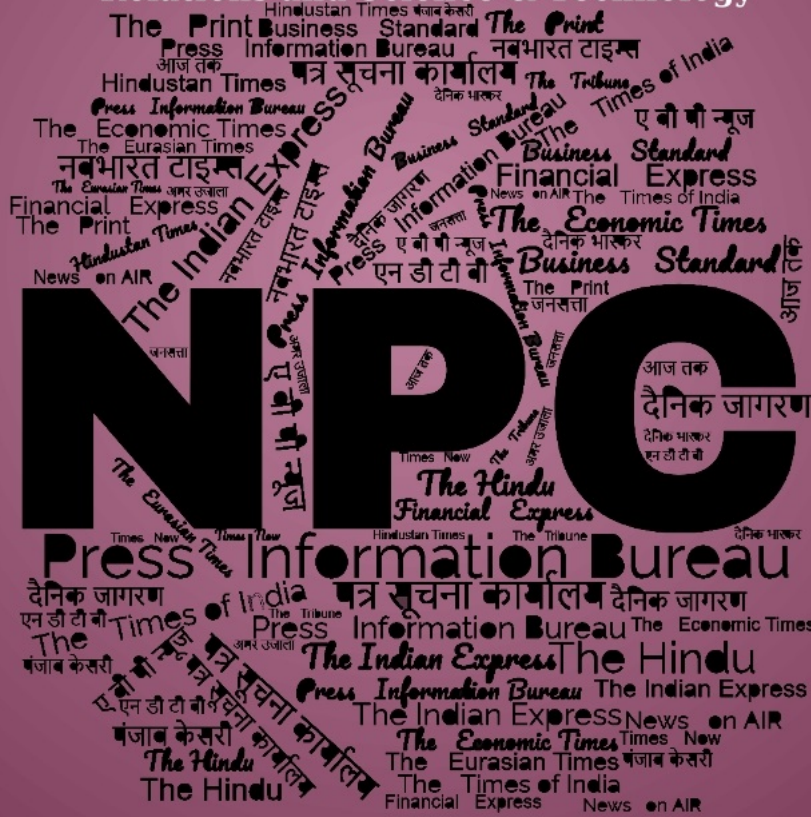
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CONTENTS

| S. No. | Title | Source | Page No. |
|--|---|---------------------------------|--------------|
| Defence News | | | 1-25 |
| Defence Strategic: National/International | | | |
| 1 | Prime Minister & his Spanish counterpart jointly inaugurate TATA Aircraft Complex for manufacturing of C-295 aircraft in Vadodara | <i>Press Information Bureau</i> | 1 |
| 2 | INS Talwar Arrives At La Réunion, France | <i>Press Information Bureau</i> | 5 |
| 3 | ICG launches two Fast Patrol Vessels with over 60% indigenous content built by Goa Shipyard Ltd | <i>Press Information Bureau</i> | 5 |
| 4 | Inauguration Of Swavlamban Exhibition | <i>Press Information Bureau</i> | 6 |
| 5 | Modi, Spanish PM Sánchez push for more joint projects in defence, trade, and deeper economic ties | <i>The Print</i> | 7 |
| 6 | India, China continue disengagement in Demchok, Depaang in eastern Ladakh | <i>The Economic Times</i> | 9 |
| 7 | India, China complete 80-90 pc disengagement in Eastern Ladakh | <i>The Economic Times</i> | 10 |
| 8 | This Iranian neighbour becomes India's largest importer as country's defence exports cross Rs 21K crore | <i>The Economic Times</i> | 12 |
| 9 | How induction of 56 C-295 military aircraft will make Indian Air Force more deadly and agile | <i>The Week</i> | 14 |
| 10 | IAF software institute gets key certification | <i>The Times of India</i> | 15 |
| 11 | How AK-203 and the KRAS facility propel India's defence self-reliance | <i>Firstpost</i> | 15 |
| 12 | Embraer's C-390 Emerges as Leading Contender for IAF's MTA Program Following Czech Success | <i>Financial Express</i> | 17 |
| 13 | Indian defence exports: From BrahMos to Akash, who are the major buyers? | <i>Business Standard</i> | 18 |
| 14 | China warns of deep-sea spying devices, underwater 'lighthouses' that guide foreign submarines | <i>The Economic Times</i> | 20 |
| 15 | China's explosive nuclear expansion: Beijing will have more than 1,000 nuclear warheads by 2030, says US Intel report | <i>The Week</i> | 21 |
| 16 | '1st Asymmetric Warfare-Capable Systems Under Biden' — Taiwan Hails NASAMS Sale; China Furious | <i>The EurAsian Times</i> | 22 |
| Science & Technology News | | | 25-30 |
| 17 | Stakeholders meeting on call for proposals under MAHA-EV Mission brings together experts to drive | <i>Press Information Bureau</i> | 25 |

India's smart transport research

- | | | | |
|-----------|--|---------------------------------|----|
| 18 | Indigenous herbal knowledge recognised through patents | <i>Press Information Bureau</i> | 27 |
| 19 | When AI changes the way we do science, will we understand the results? | <i>The Hindu</i> | 28 |

Defence News

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 28 Oct 2024

Prime Minister & his Spanish counterpart jointly inaugurate TATA Aircraft Complex for manufacturing of C-295 aircraft in Vadodara

The facility reinforces India's position as a trusted partner in global aerospace manufacturing: Shri Narendra Modi

“The factory reflects the work culture of a New India”

India’s defence manufacturing ecosystem is reaching new heights: PM

The facility is the first private sector Final Assembly Line for military aircraft in the country

First Made-in-India C-295 expected to be rolled out by September 2026;

Six of 16 aircraft to be brought in fly-away condition inducted into IAF

Prime Minister Shri Narendra Modi and his Spanish counterpart Mr Pedro Sanchez jointly inaugurated the TATA Aircraft Complex for manufacturing of C-295 aircraft at TATA advanced systems limited (TASL) Campus in Vadodara, Gujarat on October 28, 2024.

Addressing the gathering, the Prime Minister remarked that it is the Prime Minister of Spain Mr Pedro Sanchez’s first visit to India and the partnership between the two countries is finding a new direction today. Noting the inauguration of the TATA Aircraft Complex for manufacturing C-295 aircraft, the Prime Minister said that it would not only strengthen the relations between the two nations, but also give momentum to the mission of ‘Make in India, Make for the World’. Shri Modi

conveyed his best wishes to the entire team of Airbus and TATA on the occasion. The Prime Minister also paid his tributes to Late Shri Ratan Tata ji.

The Prime Minister underlined that the factory of C-295 aircraft is a reflection of the new work culture of New India and said that India's speed from idea to the execution of any project in the country can be witnessed here. Recalling the foundation stone laying of the factory in October 2022, the Prime Minister said that the facility is now ready for production of C-295 aircraft. Emphasizing the focus on eliminating unaccounted delays in the planning and execution of projects, the Prime Minister recalled the setting up of Bombardier Train Coach manufacturing facility in Vadodara as the Chief Minister of Gujarat and said that factory was ready in record time for production. "Metro Coaches made in this factory are being exported to other nations today", he added. Shri Modi expressed confidence that the aircraft made in today's inaugurated facility would also be exported.

Quoting the famous Spanish poet Antonio Machado, the Prime Minister remarked that as we start treading towards the goal, the path towards the goal is created automatically. Noting that India's defence manufacturing ecosystem was scaling new peaks today, Shri Modi said that if concrete steps were not taken 10 years ago then it would have been impossible to reach this destination today. He added that a decade ago, the priority and identity of defence manufacturing were about import and none could imagine that defence manufacturing could take place on such a large scale in India. The Prime Minister remarked that the Government decided to walk on a new path, set new goals for India, whose results are evident today.

The Prime Minister said that India's transformation of the defence sector exemplifies how a right plan and partnership can turn possibilities into prosperity. He underlined that strategic decisions have spurred the growth of a vibrant defence industry in India over the last decade.

"We expanded private sector participation in defence manufacturing, made public sector units more efficient, restructured ordnance factories into seven major companies, and empowered DRDO and HAL", said Shri Modi. He said establishing defence corridors in Uttar Pradesh and Tamil Nadu infused new energy into the sector. Touching upon Innovation for Defence Excellence (iDEX) scheme, the Prime Minister said that it has driven the growth of around 1,000 defence start-ups in the past five to six years. He informed that India's defence exports have increased 30 times over the past decade, with the country now exporting equipment to over 100 countries.

The Prime Minister underlined that he was looking at today's program beyond the manufacturing of transport aircraft. Highlighting the unprecedented growth and transformation of India's aviation sector in the last decade, Shri Modi remarked that India was providing air connectivity to hundreds of small cities in the country, while simultaneously working to make India a hub of aviation and MRO domain. He added that this ecosystem will also pave the way for Made in India civil aircraft in the future. Noting that various Indian airlines have ordered 1,200 new aircraft, Shri Modi said that this only meant the newly inaugurated factory will play a major role from designing to manufacturing civil aircraft to meet the needs of India and the world in the future.

Noting that Vadodara City was a stronghold of MSMEs, Shri Modi remarked that the city will act as a catalyst in these efforts of India. He added that the city also had a Gatishakti University, which was preparing professionals for different sectors of India. The Prime Minister also noted that there

were many companies related to many sectors like the pharma sector, Engineering and Heavy Machinery, Chemicals and Petrochemicals, Power and Energy Equipment in Vadodara. He added that now this entire region was also going to be a major hub of aviation manufacturing in India.

Concluding the address, the Prime Minister expressed confidence that today's event will inspire many new joint collaboration projects between India and Spain. He extended an invitation to the Spanish industry and innovators and encouraged them to come to India and become partners in the country's development journey.

Governor of Gujarat Shri Acharya Devvrat, Chief Minister Shri Bhupendra Patel, Raksha Mantri Shri Rajnath Singh and External Affairs Minister Dr S Jaishakar were among those present on the occasion.

Earlier, in a post on X, Raksha Mantri termed the inauguration as a special day for the Indian aerospace industry. "The C-295 project is a huge accomplishment for the Indian private industry as it is the first project of its kind in which a complete military aircraft will be manufactured in India by a private company. The project will give a big boost to India's growing aerospace ecosystem," he wrote.

Background

In September 2021, Ministry of Defence had signed a Rs 21,935-crore contract with Airbus Defence and Space SA, Spain for supply of 56 aircraft - 16 to be brought in fly away condition from Spain and 40 to be built in India by TASL.

Delivery

Of the 16 aircraft, six have already been inducted into IAF at 11 Sqn based at Vadodara. The last would be delivered by August 2025. The first Made-in-India C-295 is expected to be rolled out of the Final Assembly Line facility at Vadodara by September 2026 and the remaining by August 2031. Along with the aircraft, a Full Mission Simulator has also been installed at IAF's Agra station.

FAL facility

TASL is responsible for making 40 aircraft in India. This facility becomes the first private sector Final Assembly Line (FAL) for military aircraft in the country. It will involve the full development of a complete ecosystem from the manufacture to assembly, test and qualification, to delivery and maintenance of the complete lifecycle of the aircraft.

This facility has been built in less than two years. The Prime Minister had laid the foundation stone of C-295 aircraft manufacturing facility in Vadodara in October 2022. The pre-FAL production will start from December 2024 and the FAL assembly will start from October 2025.

'Make in India'

For the 40 aircraft to be made in India, a substantial proportion of C-295 components, sub-assemblies and major component assemblies of aero structure are planned to be manufactured in India. Of 14,000 detailed parts used in one aircraft, 13,000 would be made in India from raw material. A total of 37 companies have already been identified by Airbus, of which 33 are MSMEs.

The indigenous content in the first 16 aircraft will be 48%, and it would increase to 75% in the 24 aircraft to be made in India. All 56 aircraft will be equipped with an Electronic Warfare Suite that will be indigenously manufactured by Bharat Electronics Limited and Bharat Dynamics Limited.

Employment Generation

Number of man hours that Airbus employs to manufacture an aircraft in Spain will be gradually transferred to India. Initially, it will be 78% for first five aircraft, which will increase to 96% for remaining 35 aircraft.

The project is expected to generate 600 highly-skilled direct jobs, 3,000 indirect jobs and an additional 3,000 medium-skill employment opportunities with more than 42.5 lakh man-hours of work within the aerospace and defence sector.

Significance of C-295

The C-295 is new generation transport aircraft used for airlift operations. It has modern technology & avionics and is perhaps the best current type in its class, with a payload of 9.5T. This aircraft is being inducted into IAF to replace the HS 748 Avro.

The C-295 project is a huge accomplishment for the Indian private industry as it is the first project of its kind in which a complete military aircraft will be manufactured in India by a private company. It will provide a boost to the aerospace ecosystem in the country.

Exhibition

Prime Minister Shri Narendra Modi and his Spanish counterpart Mr Pedro Sanchez also took a walkthrough of the exhibition showcased on the occasion. DRDO is showcasing its latest range of maritime surveillance systems, namely the Multi-Mission Maritime Aircraft (MMMA) for the Indian Coast Guard and Medium Range Maritime Reconnaissance (MRMR) aircraft for the Indian Navy at the exhibition organised as part of the event. MMMA and MRMR are special mission aircraft designed & developed by Centre for Airborne Systems (CABS), DRDO with state-of-the-art advanced sensors and communication suite from various DRDO labs.

MMMA and MRMR is based on modified C-295 and has three-way collaboration between CABS, DRDO as the nodal agency for Design & Development of mission aircraft and mission systems, Airbus Defence and Space for aircraft modification and certification and TASL for manufacturing the modified aircraft in India. This entails 15 additional C-295 to be manufactured in blue aircraft configuration, in addition to the 56 aircraft ordered by IAF. This collaboration is a classic example of design in India by DRDO and make in India by Indian Industry leading to Aatmanirbhar Bharat.

DRDO is also showcasing the Airborne Early Warning and Control (AEW&C) MkII for IAF which embodies India-Spain collaboration. CABS, DRDO is the nodal agency for design and development of the mission aircraft and Airbus will modify the A321 platform based on the requirements projected by CABS for the AEW&C MkII. All the three programmes will involve synergistic participation from Indian R&D, Academia, Airworthiness Authorities, Services and Indian Industries.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2068818>



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Government of India**

Ministry of Defence

Mon, 28 Oct 2024

INS Talwar Arrives At La Réunion, France

Indian Navy's frontline stealth frigate, INS Talwar, arrived at La Réunion on 27 October 24 as a part of her ongoing deployment in Indian Ocean Region. The visit to La Reunion aims to strengthen India – France partnership to tackle regional maritime security challenges,

The ship will undertake cross-deck visits and interactions with the French Navy during the port visit. Earlier, the ship was kept open for visit by Pravasi Bharatiya on 27 October 2024.

India and France have traditionally enjoyed friendly relations and share a deep, enduring strategic partnership.

INS Talwar was commissioned on 18 June 2003 and is part of the Indian Navy's Western Fleet under the Western Naval Command. The ship is currently commanded by Captain Jithu George. The ship had recently participated in the IBSAMAR VIII multilateral exercise held in South Africa.

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**Press Information Bureau
Government of India**

Ministry of Defence

Mon, 28 Oct 2024

ICG launches two Fast Patrol Vessels with over 60% indigenous content built by Goa Shipyard Ltd

Indian Coast Guard (ICG) simultaneously launched two Fast Patrol Vessels (FPVs) 'Adamya' and 'Akshar', with over 60% indigenous content, built by Goa Shipyard Ltd. (GSL) on October 28, 2024. The vessels are part of the contract signed with GSL for eight such FPVs to be built at a cost of Rs 473 crore. With the primary role of protection, monitoring, control and surveillance, these advanced FPVs will help ICG protect offshore assets and island territories.

Each FPV has a length of 52m, breadth of 8m, max speed of 27 knots, Controllable Pitch Propeller-based propulsion system and displacement of 320 tons. The ships have been designed and constructed to meet the specific requirements of the ICG under stringent dual class certification of American Bureau of Shipping and Indian Register of Shipping.

In a first, two vessels were launched simultaneously utilising the state-of-art Ship Lift System. The FPVs were inaugurated and named in a ceremonious way by Smt Priya Paramesh in the presence of Director General ICG Paramesh Sivamani, and veterans to the chants of 'Atharva Veda'.

Addressing the gathering, DG, ICG appreciated the efforts of GSL and various industries in ensuring that all ship-building requirements of ICG are fulfilled indigenously. Congratulating employees of GSL on achieving this critical milestone, he exhorted them to ensure that the march towards 'Aatmanirbharta' in defence is pursued in the right earnest.

The ceremony was attended by Chairman & Managing Director, GSL Shri Brajesh Kumar Upadhyay and senior officials from Indian Navy, ICG, GSL and the classification societies.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2068876>



Press Information Bureau
Government of India

Ministry of Defence

Mon, 28 Oct 2024

Inauguration Of Swavlamban Exhibition

The exhibition open to innovators, startups and MSMEs organised as part of the third edition of the Naval Innovation and Indigenisation Organisation's annual event, Swavlamban, was inaugurated by Admiral Dinesh K Tripathi, Chief of the Naval Staff, at Exhibition Hall 14, Bharat Mandapam, on 28 Oct 24. The theme of Swavlamban 2024 is "Strength and Power through Innovation and Indigenisation".

Open for public viewing on 28 and 29 Oct 24, the exhibition showcases niche innovative technologies, concepts and products designed and developed by Indian defence startups and MSMEs.

Events of 28 Oct 24 included an interactive outreach session aimed at discussing problem statements and challenges posed as part of the Defence Innovation Organisation's ADITI 2.0 launch under the iDEX scheme, as also the bringing together of 'Fund Seekers' (i.e. startups/ MSMEs) and 'Fund Providers' (i.e. venture capitalists/ incubators).

Wide participation of eminent dignitaries, the Defence Attaché Corps, members of the three Armed Forces and CAPFs, the academia and the general public in the exhibition is expected to provide fillip to the spirit of innovation and strengthen the culture of creativity in addressing emerging challenges to national security.

The exhibition will remain open to visitors on 29 Oct 24 from 1000 hrs to 2000 hrs.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2068950>

Modi, Spanish PM Sánchez push for more joint projects in defence, trade, and deeper economic ties

Hailing the Airbus C295 transport aircraft joint project as a “symbol” of India-Spain ties, prime ministers Narendra Modi and Pedro Sánchez have urged companies in the defence sector to follow this blueprint for similar programmes to manufacture in India.

“Both leaders expressed satisfaction on the progress made in the C-295 aircraft project as a symbol of the growing defence industrial cooperation between the two countries. In line with this growing partnership, and in recognition of the advanced capabilities and competitiveness of the Spanish defence industry and its contribution to the goals of the ‘Make in India’ initiative, they encouraged their respective defence industries in other sectors to set up similar joint projects in India,” said the India-Spain joint statement released following the bilateral meet Monday.

Sánchez, who is in India for a two-day bilateral visit—the first by a Spanish prime minister in 18 years—joined Modi to inaugurate the Tata Advanced Systems Limited (TASL) manufacturing plant in Vadodara, Gujarat, where 40 C-295 transport aircraft will be built for the Indian Air Force (IAF).

The Rs. 21,935 crore deal struck in 2021 with Airbus Spain, will see a total of 56 C-295 delivered to India. Apart from the 40 planes, which are to be manufactured in the TASL plant, India will receive 16 aircraft in fly-away condition, which will be built in Spain.

India received the first aircraft in September 2023. A total of six planes have been delivered so far. In the original deal, all 16 will be delivered by August 2025.

Another Spanish defence company Navantia has partnered with Larsen & Toubro in a bid to build India’s ambitious P75I submarine project. A total of six diesel-electric submarines are to be built with an Air Independent Propulsion (AIP) system.

The Spanish firm’s bid is one of two being evaluated by the Indian Navy. The other bid came from German company ThyssenKrupp Marine Systems Limited (TKMS).

Tanmaya Lal, Secretary (West) in the Ministry of External Affairs (MEA), did not answer whether the submarine deal came up in the discussions between the two leaders.

“Defence cooperation is an area of interest for both sides, but at this stage I would not like to say anything more,” Lal said at a special media briefing Monday.

The other subjects that came up for discussions included the India-Spain economic relations, global conflicts such as the Russia-Ukraine war, the conflict in West Asia as well as global terrorism.

Sánchez accompanied by Minister for Tourism Jordi Hereu i Boher and Minister of Transportation and Sustainable Mobility Óscar Puente left for Mumbai following the official programme in Vadodara. Sánchez, who also arrived with a business delegation of 15 CEOs, will hold meetings in Mumbai Tuesday, as well as attend the Fourth Spain-India Forum.

The two leaders declared 2026 as India-Spain Year of Culture, Tourism and Artificial Intelligence.

Economic ties & new consulates

A focus of the talks between Modi and Sánchez focused on deepening the economic ties across various sectors between India and Spain. Trade between the two countries touched \$10 billion last year, while investments touched \$5 billion.

“Recognising the expertise of Spanish companies in areas such as energy, including renewables, nuclear, and smart grids, food processing, healthcare and health services, automotive and transport infrastructure, including trains, roads, ports and transport network management, the two leaders welcomed further collaboration in these areas,” said the joint statement.

One of the outcomes from the visit included a Memorandum of Understanding (MoU) in rail transport, as well as a fast-track mechanism for facilitating mutual investments between the two countries.

India has operationalised a Consulate General in Barcelona in August, while Spain will be opening another consulate in Bengaluru soon—a decision welcomed by both the leaders.

The India-European Union Free Trade Agreement (FTA) also figured in the discussion. Both countries reaffirmed their commitment to advance the negotiations for the comprehensive agreement, which has been ongoing in its current format since 2022.

Global issues

The Russia-Ukraine conflict and the situation in West Asia also figured in the discussion between Modi and Sánchez. The two leaders also agreed to enhance cooperation at multilateral fora such as the United Nations.

According to the Secretary (West) Lal, PM Modi reiterated India’s stance that the situation between Russia and Ukraine can be solved by direct discussions between the two parties through diplomacy.

“Both sides agreed to remain in touch to support efforts aimed at negotiated settlement of the conflict,” said the joint statement regarding the Russia-Ukraine war.

Madrid also welcomed New Delhi’s application to join the Ibero-American Conference as an ‘Associate Observer’, as a part of India’s push to deepen ties with the Latin American countries. Both the countries have agreed to finalise the process by 2026 in time for the Ibero-American summit, which is scheduled to take place in Spain.

At the multilateral level, India has agreed to support Spain’s candidature for the United Nations Security Council (UNSC) for the 2031-32 term, and Madrid has agreed to support New Delhi’s candidature for the period of 2028-29.

On combating global terrorism, the two countries “called for concerted action against all terrorist groups proscribed by the UNSC including Al Qa’ida, ISIS/Daesh, Lashkar-e-Tayyiba (LeT), Jaish-e-Mohammad (JeM) and their proxy groups”.

<https://theprint.in/diplomacy/modi-spanish-pm-sanchez-push-for-more-joint-projects-in-defence-trade-and-deeper-economic-ties/2332467/>

THE ECONOMIC TIMES

Mon, 28 Oct 2024

India, China continue disengagement in Demchok, Depaang in eastern Ladakh

Disengagement between the Indian and Chinese Army continues in Depsang plains and Demchok in the Eastern Ladakh sector, defence sources said on Monday. According to the defence sources, the process is expected to be completed soon.

Earlier, the Chinese Foreign Ministry said on Friday that the frontier troops of both India and China are engaged in "relevant work" in accordance with the agreement reached between the two nations on issues concerning the border.

Addressing a press briefing on Friday, Chinese Foreign Ministry spokesperson Lin Jian stated that the work is underway "smoothly".

Being asked whether India and China have started pulling back their troops from friction points, Li Jian said, "In accordance with the resolutions that China and India reached recently on issues concerning the border area, the Chinese and Indian frontier troops are engaged in relevant work, which is going smoothly at the moment."

On October 21, India announced that it reached an agreement with China on patrolling along the Line of Actual Control (LAC) in eastern Ladakh ending the over four-year-long military standoff. Speaking at an event in New Delhi on October 24, Defence Minister Rajnath Singh said the two countries had reached a consensus to restore the "ground situation" based on the principles of equal and mutual security.

He added that this includes restoration of "patrolling and grazing to traditional areas". Singh attributed the progress in ties to the "power of engaging in continuous dialogue because, sooner or later, solutions will emerge."

"India and China have been involved in talks both at diplomatic and military levels to resolve their differences in certain areas along the LAC. A broad consensus has been achieved to restore ground situation based on the principles of equal and mutual security," he said delivering the keynote address at the second Chanakya Defence Dialogue.

Earlier, Prime Minister Narendra Modi met with Chinese President Xi Jinping on the sidelines of the BRICS Summit in Russia and welcomed the agreement reached between the two countries on

patrolling arrangements along the LAC in eastern Ladakh. The meeting between the two leaders came days after the Ministry of External Affairs (MEA) announced that an agreement had been reached between the two nations regarding patrolling arrangements along the Line of Actual Control (LAC) in the India-China border areas.

The border standoff between India and China began in eastern Ladakh along the LAC in 2020, sparked by Chinese military actions. This incident led to prolonged tensions between the two nations, significantly straining their relations.

Foreign Secretary Vikram Misri addressing a media briefing on the sidelines of the BRICS summit in Kazan said that during the meeting of Prime Minister Narendra Modi with President Xi Jinping, the two leaders "welcomed the agreement reached between the two sides through sustained dialogue over the last several weeks in diplomatic as well as military channels."

"PM Modi underscored the importance of not allowing differences on boundary-related matters to disturb peace and tranquillity on our borders. The two leaders noted that the special representatives on the India-China boundary question have a critical role to play in the resolution of the boundary question and for the maintenance of peace and tranquillity in the border areas," the Foreign Secretary said.

Misri said the two leaders also reviewed the state of bilateral relations from a strategic and long-term perspective.

"The restoration of peace and tranquillity in the border areas will create space for returning us towards the path of normalization of our bilateral relations. Officials will now take the next steps to discuss enhancing strategic communication and stabilizing bilateral relations by utilizing the relevant official bilateral dialogue mechanisms, including at the level of our respective foreign ministers," Misri said.

<https://economictimes.indiatimes.com/news/defence/india-china-continue-disengagement-in-demchok-depaang-in-eastern-ladakh/articleshow/114693809.cms>

THE ECONOMIC TIMES

Mon, 28 Oct 2024

India, China complete 80-90 pc disengagement in Eastern Ladakh

The armies of India and China have completed 80-90 per cent disengagement at Depsang and Demchok in Eastern Ladakh. The process includes removal of all types of infrastructure and pulling back of troops by both sides, reported ANI quoting sources. The entire process is expected to be completed by Tuesday, October 29.

Earlier on Friday, the Chinese Foreign Ministry said the frontier troops of both India and China are engaged in "relevant work" in accordance with the agreement reached between the two nations on issues concerning the border.

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India-China border agreement

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PM Modi, Xi Jinping meet

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The Indo-China border conflict

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<https://economictimes.indiatimes.com/news/defence/india-china-complete-80-90-pc-disengagement-in-eastern-ladakh/articleshow/114696063.cms>

THE ECONOMIC TIMES

Mon, 28 Oct 2024

This Iranian neighbour becomes India's largest importer as country's defence exports cross Rs 21K crore

India is witnessing a significant shift in its defence export strategy, shedding previous hesitations regarding the sale of lethal weapons.

As a result, Armenia has emerged as the largest client for India's finished weapon systems, which include the Akash air defence missile systems, Pinaka multi-launch rocket systems, and 155mm artillery guns.

As told to TOI, official sources reported that India's military sales reached ₹21,083 crore (approximately \$2.6 billion) for the 2023-24 fiscal year, with Armenia, the United States, and France being the top three destinations for these exports.

Expanding Clientele and Diverse Offerings

Indian public and private sector companies are now exporting a wide array of arms, ammunition, and fuses to around 100 countries, including complete weapon systems and platforms such as BrahMos supersonic cruise missiles, Dornier-228 aircraft, artillery guns, radars, Akash missiles, Pinaka rockets, and armored vehicles.

Notably, exports to the US mainly consist of subsystems and components, with major defence contractors like Boeing and Lockheed Martin sourcing fuselage, wings, and other parts for aircraft and helicopters from India as part of their global supply chain commitments.

The Tata Boeing Aerospace venture in Hyderabad is a prime example, producing the fuselage and secondary structures for Apache attack helicopters. According to sources, “France, in turn, is importing a lot of software and electronic equipment.”

Armenia's Growing Role

Armenia has signed a series of deals with India over the past four years for importing various finished products, including missiles, artillery guns, rocket systems, weapon-locating radars, bullet-proof vests, and night-vision equipment, as well as a wide variety of ammunition and artillery shells.

Some agreements were finalized during Armenia's conflicts with Azerbaijan, which maintains close ties with Turkey and Pakistan. The Times of India reported that Armenia has become the first foreign customer for the indigenously developed Akash air defence missiles, boasting an interception range of 25 km.

Other nations, such as Brazil, are exploring co-production and co-development of advanced versions of the Akash system.

“Brazil wants an inter-governmental agreement on it...talks are underway,” stated another source. Additionally, following India's successful bid for a \$375-million contract in January 2022 for exporting three BrahMos anti-ship coastal missile batteries to the Philippines, interest in acquiring these precision-strike missiles has grown among ASEAN countries and several Gulf nations.

Transitioning from Importer to Exporter

Despite being the world's largest arms importer, accounting for 9.8% of total global imports during the 2019-2024 period, India is progressively expanding its domestic defence-industrial base (DIB).

The Indian government is implementing bans on certain weapon imports under its initiatives for ‘Aatmanirbharta’ (self-reliance) and ‘Make in India’ while aggressively pushing for arms exports.

India's annual defence production reached a record high of ₹1.2 lakh crore in 2023-24, with the government setting an ambitious target of ₹3 lakh crore by 2028-29, alongside arms exports of ₹50,000 crore.

The defence-industrial base now includes 16 defence public sector undertakings (PSUs) and has expanded to over 430 licensed companies and 16,000 micro, small, and medium enterprises (MSMEs), resulting in a threefold increase in production value since 2014-15.

The private sector's contribution to this growth stands at 21%, highlighting its increasing role in the defence landscape.

<https://economictimes.indiatimes.com/news/defence/this-iranian-neighbour-becomes-indias-largest-importer-as-countrys-defence-exports-cross-rs-21k-crore/articleshow/114682803.cms>

How induction of 56 C-295 military aircraft will make Indian Air Force more deadly and agile

Prime Minister Narendra Modi and his Spanish counterpart Pedro Sanchez jointly inaugurated the TATA Aircraft Complex for manufacturing C-295 aircraft at TATA Advanced Systems Limited (TASL) Campus in Vadodara of Gujarat on Monday. This is the first private sector Final Assembly Line (FAL) for military aircraft in India.

Under the C-295 programme, as many as 56 aircraft are to be delivered to IAF, out of which 16 are being given directly by Airbus from Spain and the remaining 40 are to be made in India. Tata Advanced Systems will produce 40 fly-away C-295 aircraft from its facility. They will also provide MRO (maintenance, repair, and operations) support and service for the total 56 aircraft that will be procured by IAF.

What makes the aircraft special

Designed for a variety of roles, including cargo and personnel transport, medical evacuation, maritime patrol, and electronic signals intelligence operations, C-295 medium-lift tactical transport aircraft will replace the Indian Air Force's fleet of ageing Avro-748 planes that entered the service over six decades ago. As of now, the IAF has already inducted six C-295 aircraft in its Vadodara-based 11 Squadron.

"This is much better than the AN32 (Antonov An-32 aircraft) performance. While the AN32, the getting in and getting out is from the side doors like any commercial aeroplane, the C295 has a ramp loading equipment, para assault landing, short field landing, high altitude operations, valley flying, and rescue becomes very easy," Air Marshal Sanjeev Kapoor (Retd) told news agency ANI.

The C-295 is known to be a superior aircraft used for tactical transport of up to 71 troops or 50 paratroopers. They are also used for logistic operations to locations that are not accessible to heavier aircraft.

With the induction of these aircraft, the ability of the IAF to airdrop paratroops and loads will be majorly enhanced. They are capable of performing special missions as well as disaster response and maritime patrol duties, apart from enhancing IAF's casualty or medical evacuation capabilities.

According to Airbus, "With the longest endurance in its class, the C295 provides more than 11 hours of persistent surveillance. Its rear ramp enables easy deployment of life rafts, and the fuselage's bubble windows ensure excellent visual coverage."

All the 56 aircraft of the IAF, which combine advanced technology with operational flexibility, will be equipped with an electronic warfare suite that will be indigenously manufactured by Bharat Electronics Limited, and Bharat Dynamics Limited, news agency PTI reported, citing sources.

The first C-295 is likely to roll out of the plant in September 2026.

Defence Minister Rajnath Singh, in a tweet, called the C-295 project "a major achievement for the Indian private sector," and added, "The project will give a significant boost to India's expanding aerospace ecosystem."

<https://www.theweek.in/news/defence/2024/10/28/how-induction-of-56-c-295-military-aircraft-will-make-indian-air-force-more-deadly-and-agile.html>

THE TIMES OF INDIA

Sun, 27 Oct 2024

IAF software institute gets key certification

The Software Development Institute (SDI), Air Force, a premier institute located in Bengaluru and entrusted with the important role of enhancing the operational capabilities of the IAF, obtained a key certification, making it the first IAF institute to achieve this feat.

SDI's task involves the design and development (D&D) of mission-critical avionics software for the integration of high-tech smart weapons and sensors on frontline fighter platforms of the IAF, such as the Su30, LCA, MiG29, and Jaguar aircraft.

The ministry of defence (MoD) said in an official statement: "D&D of mission-critical avionics and simulation software for the leading edge of air combat not only requires the best knowledge and experience, but also requires stringent implementation of best quality assurance practices."

Towards this, SDI became the first defence organisation in India to achieve the industry-best practices gold standard, the Capability Maturity Model Integration (CMMI) DEV Level 3 Version 1.3 certification, in 2012. Now it has achieved CMMI DEV Level 3 Version 3.0 certification.

<https://timesofindia.indiatimes.com/city/bengaluru/iaf-software-institute-achieves-prestigious-cmmi-certification/articleshow/114663142.cms>



Mon, 28 Oct 2024

How AK-203 and the KRAS facility propel India's defence self-reliance

In a rapidly evolving global security landscape, India's defence sector is undergoing a transformative shift aimed at achieving self-reliance and enhancing military capabilities. Central to this vision is the Make in India initiative, which seeks to foster indigenous manufacturing and reduce reliance on foreign imports.

Two notable developments exemplify this commitment: the production of the AK-203 assault rifle in Uttar Pradesh and the establishment of the KRAS missile facility in Hyderabad.

The AK-203, a collaboration between India's Advanced Weapons and Equipment India Limited (AWEIL) and Russia's Rosoboronexport (RoE), represents a significant step towards modernising the Indian armed forces.

Simultaneously, the KRAS facility stands as a testament to the potential of private sector involvement in defence manufacturing, focussing on advanced missile technology. Together, these initiatives underscore India's dedication to strengthening its defence capabilities while promoting indigenous production, innovation and economic growth.

AK-203: The making of India's new standard assault rifle

In a significant development for India's defence capabilities, the AK-203 assault rifle is being manufactured at a state-of-the-art facility in Korwa, Uttar Pradesh. This ambitious project is a collaboration between India's Advanced Weapons and Equipment India Limited (AWEIL) and Russia's Rosoboronexport (RoE).

With a projected production of over 600,000 units, the AK-203 is set to replace the aging INSAS rifles currently in service, marking a critical shift towards modernising the Indian armed forces.

The partnership aims to bolster India's military self-sufficiency under the Make in India initiative, enhancing the country's indigenous production capabilities while reducing reliance on foreign imports.

By localising the manufacturing of this iconic weapon, India is not only advancing its defence technology but also generating employment opportunities and fostering technological advancements in the sector.

India's first private missile facility: The KRAS story

In another leap towards achieving self-reliance in defence production, India has inaugurated the KRAS missile facility in Hyderabad. This facility, dedicated to missile sub-systems, represents a groundbreaking move in enhancing indigenous defence technology.

As India's first private sector initiative in this domain, KRAS aims to strengthen the country's capabilities in missile production, aligning with the broader vision of Make in India.

The KRAS facility is poised to play a crucial role in developing advanced missile systems, contributing to India's strategic defence objectives.

By fostering a robust private sector in defence manufacturing, this initiative not only enhances the country's technological prowess but also stimulates economic growth through job creation and innovation.

<https://www.firstpost.com/india/how-ak-203-and-the-kras-facility-propel-indias-defence-self-reliance-13829896.html>

Embraer's C-390 Emerges as Leading Contender for IAF's MTA Program Following Czech Success

The Embraer C-390 Millennium, already hailed as a reliable workhorse by North Atlantic Treaty Organisation (NATO) members like the Netherlands, Hungary, and most recently, the Czech Republic, is now taking strides toward securing a pivotal role in the Indian Air Force's (IAF) Medium Transport Aircraft (MTA) program. Following the Czech Republic's recent procurement of two C-390s, Embraer executives have intensified efforts in India, exploring partnerships and supply chain expansions that would strengthen the C-390's standing as a strong contender in a highly competitive market.

During their recent visit to India, Embraer executives engaged with local suppliers across sectors such as aerostructures, machining, composites, and software development. The Brazilian aerospace giant aims to establish a robust regional footprint, seeing India as a potential anchor in its supply chain strategy. The C-390's versatile design and its capability to handle multiple missions — from tactical transport to humanitarian aid and medical evacuations — make it well-suited to India's operational demands, especially amid the country's increasing focus on rapid response and strategic mobility.

Strengthening the India Connection

India has a long history with Embraer, with 44 of its aircraft currently operating in the country. Among them are the IAF's ERJ-145-based early warning aircraft, locally dubbed 'Netra,' which is used for critical intelligence and surveillance missions. Building on this legacy, Embraer's latest partnership proposal for the C-390 involves Mahindra Defence Systems, with plans to establish a local assembly line if the C-390 is selected for the MTA program. This assembly would not only foster high-value manufacturing in India but also position Embraer as a partner in India's defence self-reliance agenda.

"India's well-established aerospace sector and the government's commitment to defence manufacturing provide fertile ground for deep collaboration," said Roberto Chaves, Embraer's executive vice president for global procurement and supply chain, highlighting India's potential role in Embraer's growth strategy. The partnership would mark a significant shift, with Embraer offering not just tactical solutions but the transfer of advanced manufacturing capabilities to India's defence sector.

Competing in a Crowded Market

Embraer's C-390, with its impressive payload capacity of 26 tons and a top speed of 470 knots, has proven itself as a robust alternative to the widely used Lockheed Martin C-130J. This year, Lockheed Martin moved to bolster its own bid for India's MTA program, proposing an Indian Maintenance, Repair, and Overhaul (MRO) facility for the C-130J in collaboration with Tata

Advanced Systems. With two global aerospace players contending for India's procurement, competition is heating up, drawing in proposals that promise local production, logistical support, and advanced capabilities for the IAF.

The C-390's flexibility, mission reliability, and capability to operate on unpaved runways are among its standout features. Globally, it boasts a mission capability rate of 93%, underscoring its dependability across various operational environments — an essential attribute for India's demanding and varied geographies. Furthermore, the recent Czech Republic contract underscores the aircraft's credibility among NATO allies, reinforcing its appeal to the IAF as a NATO-standard platform equipped for diverse missions.

Strategic Implications

As India evaluates options to modernise its fleet and boost its tactical airlift capabilities, Embraer's proposition of a regional assembly line aligns closely with New Delhi's ambitions of defence self-reliance. The C-390's entry could support India's goal of transforming its defence industry into an export-oriented hub, enhancing the "Make in India" program with advanced technology and sustainable manufacturing practices.

The decision on the MTA program is expected to play out over the coming months, with both Embraer and Lockheed Martin sharpening their focus on India's unique needs. Should Embraer secure the contract, the C-390 would not only fulfill operational needs but also deepen the India-Brazil defence partnership, marking a significant step toward India's strategic diversification in defence procurement.

As India considers its options, the C-390 Millennium stands ready — a symbol of Embraer's ambitious pivot to the Indian market and a compelling choice for the IAF's modern airlift needs.

<https://www.financialexpress.com/business/defence-embraers-c-390-emerges-as-leading-contender-for-iafs-mta-program-following-czech-success-3651101/>

Business Standard

Mon, 28 Oct 2024

Indian defence exports: From BrahMos to Akash, who are the major buyers?

The United States (US), France, and Armenia have emerged as the top three destinations for Indian defence exports, with Armenia in particular being the biggest client of 'finished' Indian weapons and equipment like 155mm artillery guns and the Akash air defence missile and Pinaka multi-launch rocket systems, The Times of India reported on Monday, citing sources.

This comes at a time when India's defence exports have touched a record Rs 21,083 crore (approximately \$2.63 billion) in the financial year 2023-24 (FY24), amounting to a growth of 32.5 per cent over the previous financial year's figure of Rs 15,920 crore. According to the Ministry of

Defence (MoD), this figure indicates that Indian defence exports have grown by 31 times in the past 10 years, when compared to FY14.

What is India exporting in the defence sector?

The country's public and private sector defence companies are undertaking defence exports to around 100 countries, according to the national daily. These exports include a wide range of arms, ammunition, and fuses. However, some complete weapon systems, such as the BrahMos supersonic cruise missile, artillery guns, Dornier-228 aircraft, radars, Akash air defence missiles, Pinaka rockets, and armoured vehicles are also being exported by Indian firms.

What defence products is India exporting to the US?

Defence exports to the US are mainly made up of subsystems and components, including fuselage, wings, and other parts of aircraft and helicopters to global defence majors like Boeing and Lockheed Martin, the report explained.

These global firms are sourcing these components from India as part of their global supply chain networks, as well as part of their offset commitments related to contracts they have won from India. For example, the Tata Boeing Aerospace venture in Hyderabad is manufacturing the fuselage and secondary structures for the Apache attack helicopters.

What about France?

While the report did not have elaborate details about what France is sourcing from India, an unnamed source was quoted as saying that India is exporting "a lot of software and electronic equipment" to the French in the defence sector.

What weapons is Armenia buying from India?

Armenia, a former Soviet Republic, has signed a number of deals with India over the last four years for 'finished' systems such as artillery guns, weapon-locating radars, missiles, rocket systems, bullet-proof vests, and night-vision equipment, reported the national daily. Armenia is also buying a wide variety of India-made ammunition and artillery shells.

Some of these deals were reportedly inked during Armenia's conflict with Azerbaijan, which has close ties with Pakistan and Turkiye — over Nagorno-Karabakh. According to an analysis by the Jamestown Foundation, a Washington, D C–based defence policy think tank, Armenia became the largest foreign recipient of Indian weapons in 2020, with contracts between New Delhi and Yerevan amounting to an estimated \$2 billion.

Under the \$2-billion 2020 defence partnership, Armenia has acquired, or is in the process of acquiring, Indian-made weapon systems, including the Akash-1S air defence system. Armenia placed a \$720-million order for 15 indigenously developed Akash-1S air defence systems in 2022, making it the Bharat Dynamics Limited platform's first international customer.

Against this backdrop, an Indian finance ministry report has stated that Armenia "has become the largest importer of weapons from India after concluding deals on the purchase of Pinaka multiple-launch rocket systems and Akash anti-aircraft systems." To strengthen military ties with India, Armenia also appointed a defence attaché to its embassy in New Delhi in 2023.

Who else wants to buy India's Akash anti-aircraft missile system?

While Armenia is the first foreign customer for the air defence system, other countries like Brazil are also keen on the co-production and co-development of its advanced versions, added The Times of India report. One source told the national daily that Brazil "wants an inter-governmental agreement" regarding the Akash system, adding that "talks are underway".

What about BrahMos exports?

After India clinched a \$375-million contract with the Philippines in 2022 for the export of three BrahMos anti-ship coastal missile batteries, other countries belonging to the Association of Southeast Asian Nations (Asean) grouping, along with some Gulf nations, are also showing increasing interest in acquiring the missiles that have been co-developed by India and Russia, added the national daily.

Why does India still have a long way to go in defence self-sufficiency?

Despite the recent 'Aatmanirbharta' (self-reliance) efforts, India continued to be the world's largest arms importer, accounting for 9.8 per cent of total global imports, in the 2019-2023 period. However, India has banned the import of certain weapon systems under its 'Aatmanirbharta' drive, and is aggressively pushing defence exports.

India's annual defence production hit a record high of almost Rs 1.27 trillion in FY24, up 16.7 per cent over the previous year's figure of about Rs 1.09 trillion. The record production figure also means the country's defence ecosystem has covered over 40 per cent of the Centre's ambitious annual defence production target of Rs 3 trillion by FY29.

Apart from the 16 defence public sector undertakings, the country's defence-industrial base has also expanded to over 430 licenced companies and 16,000 micro, small and medium enterprises, along with an estimated three times increase in value of production since FY15. The private sector accounts for 21 per cent of this.

https://www.business-standard.com/external-affairs-defence-security/news/indian-defence-exports-from-brahmos-to-akash-who-are-the-major-buyers-124102800396_1.html

THE ECONOMIC TIMES

Tue, 29 Oct 2024

China warns of deep-sea spying devices, underwater 'lighthouses' that guide foreign submarines

China's Ministry of State Security said on Tuesday that it had retrieved spying devices both on the ocean surface and in the depths of the sea, including underwater "lighthouses" that could guide the transit of foreign submarines. The ministry said it had uncovered devices that had been hidden on the ocean floor and were sending back information that could "pre-set the field for battle," in an article on its official WeChat account, China's most popular social media app.

Recent sea and air confrontations in the South China Sea between China and the Philippines over competing territorial claims in the highly strategic waterway have raised the risk of an escalation that could eventually involve the U.S., which is treaty-bound to defend the Philippines if it is attacked.

China has also recently staged war games around Taiwan in which it simulated attacks and deployment of ships and aircraft, drawing condemnation from the democratically governed island's government and the United States.

"National security forces have seized a variety of special technical devices used for spying on marine information and data, hidden in the vastness of the sea," the state security ministry said, without specifying where the devices were found.

"Some act as 'secret agents,' drifting and floating with the waves, monitoring the situation in our territorial waters in real time. Some act as underwater 'lighthouses,' indicating the direction for foreign submarines that have invaded our waters."

China claims sovereignty over nearly all the South China Sea, including areas claimed by Brunei, Malaysia, the Philippines and Vietnam. Beijing has also said it will never renounce the use of force over Taiwan, which rejects China's sovereignty claims and says only the island's people can decide their future.

A submarine arms race is intensifying between China and the United States and its allies, analysts say, with Beijing on track to have a new generation of nuclear-powered and -armed submarines in operation by the end of the decade.

"Facing a serious and complicated covert struggle for deep-sea security and the real threat of foreign espionage and intelligence agencies... (the ministry) will firmly defend China's sovereignty, security and development interests and contribute to the construction of a strong maritime nation," the ministry said.

<https://economictimes.indiatimes.com/news/defence/china-warns-of-deep-sea-spying-devices-underwater-lighthouses-that-guide-foreign-submarines/articleshow/114711462.cms>

THEWEEK

Mon, 28 Oct 2024

China's explosive nuclear expansion: Beijing will have more than 1,000 nuclear warheads by 2030, says US Intel report

In a bid to outpace and outdo the US, China is rapidly expanding and modernising its nuclear weapons. Currently, China's nuclear stockpile is well below the US.

According to a report by the US Defence Intelligence Agency, titled 'Nuclear Challenges: The Growing Capabilities of Strategic Competitors and Regional Rivals', China developing a range of new nuclear capabilities, including its largest buildup of nuclear missile silos; groundmobile, air-

launched, and submarine-launched weapons; nuclear-capable hypersonic glide vehicles (HGVs); as well as C4ISR capabilities to support a launch-on-warning posture.

Multiple factors, including strategic ambitions, security interests, technological capabilities, and parochial interests of military and industrial stakeholders drive China's nuclear modernisation.

Beijing, which is rapidly expanding its nuclear warhead stockpile, probably "will introduce new capabilities which carry the potential to destabilise the status quo over the next decade as it develops concepts for new systems' use and integrates them into its broader warfighting and deterrence doctrine," the report stated.

According to US Department of Defence, the estimated nuclear warhead stockpile of China was somewhere in 200s, but this is expected to at least double by 2030. Beijing probably accelerated its nuclear expansion as its stockpile is now more than 500 operational nuclear warheads and is on track to exceed previous projections, the report said.

"By 2030, we estimate that China will have over 1,000 operational nuclear warheads, most of which will be fielded on systems capable of ranging the continental United States," the report said.

Most of this stockpile growth is expected to come from a silo-based solid-propellant missile project, silo-based liquid-propellant missile expansion, mobile ICBM(intercontinental ballistic missile) expansion, and theater capabilities expansion.

The nuclear strategy of the People's Liberation Army (PLA) is based on deterrence of an enemy first strike and counterstrike when deterrence fails, threatening retaliation against an adversary's military capability, population, and economy.

China very likely is also working to introduce a variety of completely new nuclear capabilities, including ICBM-range nuclear-armed HGVs, to its arsenal, some of which will be fielded in the near future, if not already fielded, the report added.

<https://www.theweek.in/news/defence/2024/10/28/chinas-explosive-nuclear-expansion-beijing-will-have-more-than-1000-nuclear-warheads-by-2030-says-us-intel-report.html>



Tue, 29 Oct 2024

‘1st Asymmetric Warfare-Capable Systems Under Biden’ — Taiwan Hails NASAMS Sale; China Furious

The United States recently sanctioned a \$2 billion arms package for Taiwan, which includes the National Advanced Surface-to-Air Missile System (NASAMS). The approval, granted by the US State Department's Bureau of Political-Military Affairs, marks a key step in bolstering Taiwan's defensive capabilities as tensions with China continue to escalate.

The proposed arms package includes three National Advanced Surface-to-Air Missile Systems (NASAMS) and supporting equipment valued at up to \$1.16 billion. This NASAMS, which has proven effective in Ukraine, will be accompanied by advanced radar and missile systems to enhance the defensive network around the island nation.

The package's key components include three AN/MPQ-64F1 Sentinel radars, 123 Advanced Medium-Range Air-to-Air Missiles-Extended Range (AMRAAM-ER), and two AMRAAM-C8 guidance sections. Additionally, the sale provides for fire distribution centers, Canister Launcher Systems, electro-optical/infrared (EO/IR) targeting systems, and Tactical Control Centers.

These advanced systems will enable Taiwan's military to operate NASAMS effectively, providing a critical layer of air defense coverage. Taiwan's Ministry of Defense has expressed optimism about the deal, noting that the NASAMS technology will "strengthen the Taiwanese army's air defense capabilities."

Alongside the advanced air defense system, the US has also approved the sale of AN/TPS-77 and AN/TPS-78 radar turnkey systems and associated equipment to Taiwan, valued at an estimated \$828 million. Taiwan's presidential office thanked the United States for the green light on the arms sale. Since current President Lai Ching-te took office in May, Taiwan has ramped up its defense measures in response to escalating Chinese military activities in the region.

In a recent show of force, China conducted large-scale military exercises encircling Taiwan for the second time since Lai assumed office, describing the exercises aimed at "sealing off key ports and key areas" around Taiwan. During these drills, Taiwan observed a record one-day deployment of 153 Chinese military aircraft, 14 naval vessels, and 12 government ships, demonstrating Beijing's intensified pressure on Taiwan, which it claims as part of its territory.

Meanwhile, the latest US arms deal has provoked strong objections from Beijing. China's Foreign Ministry condemned the sale as a direct challenge to its sovereignty. Chinese officials argued that the deal violates the one-China principle and undermines the three China-US joint communiqués, particularly the August 17 Communiqué of 1982.

The Strategic Role Of NASAMS

This state-of-the-art system is designed to intercept a wide range of aerial threats, including hostile aircraft, drones, and cruise missiles. The NASAMS operates on a sophisticated network that utilizes ground-launched Air Intercept Missile (AIM)-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAM) to effectively neutralize threats.

At the core of the system is its X-Band, 360-degree phased array radar, which has a target identification range of 75 kilometers (approximately 47 miles). This advanced radar system allows NASAMS to engage up to 72 targets simultaneously in both active and passive modes. Utilizing active seeker missiles, it can intercept targets beyond visual range, showcasing its effectiveness in various combat scenarios.

The island nation first communicated its interest in acquiring the NASAMS to US officials in 2022. However, the United States was unable to proceed with the transfer of this air defense system, developed in collaboration with Norway, without obtaining the necessary permission from the Scandinavian nation and, by extension, NATO.

Nonetheless, the recent approval of the sale shows NATO countries' commitment to strengthening Taiwan's defenses in light of China's aggressive military actions. Experts in Taiwan view the NASAMS as a vital tool for countering aerial threats to strategic installations. Taiwan-based defense expert Mei Fu-hsing said that the NASAMS represents the first asymmetric-warfare-capable systems provided under President Joe Biden's administration.

The NASAMS is composed of a self-contained unit that integrates a fire control center, radar, and launchers, enabling company-sized units to operate the system efficiently. Military analysts suggest that the radar and missile systems will improve Taiwan's ability to defend its capital, Taipei, from threats posed by fighters and drones.

Meanwhile, for long-range surveillance, the AN/TPS-77 radar system, which can detect aerial objects within a 470-kilometer range, will play a critical role in early warning capabilities. Similarly, the AN/TPS-78 radar system, with an instrumental range of 444 kilometers, is adept at identifying low-altitude cruise missiles and drones. Retired Taiwanese Air Force officer Chou Yu-ping highlighted the importance of integrating intelligence from the AN/MPQ-64F1 Sentinel radar systems with Taiwan's Air Force network for a comprehensive defense strategy.

NASAMS vs. Patriot vs. THAAD

The potential integration of the National Advanced Surface-to-Air Missile System (NASAMS) into Taiwan's defense portfolio signifies a crucial enhancement to its multi-layered air defense strategy. With Taipei already operating the Patriot air defense system—another US-supplied weapon that has garnered recognition for its effectiveness during the ongoing conflict in Ukraine—Taiwan is taking decisive steps to bolster its defenses amid rising tensions in the region.

The United States developed a more advanced air defense system, the Terminal High Altitude Area Defense (THAAD). While past reports suggested the potential for its deployment in Taiwan, no plans are currently in place for such an arrangement, and the United States has no intentions of selling this sophisticated system to Taiwan.

Moreover, Beijing's sharp response to the deployment of THAAD in South Korea previously highlighted the geopolitical sensitivities surrounding advanced military systems in East Asia. As Taiwan continues to navigate its complex relationship with China, the addition of NASAMS to its arsenal serves as a clear signal of its intent to enhance its deterrence capabilities. NASAMS is primarily engineered for medium-range air defense, effectively targeting a diverse range of threats, including drones, tactical aircraft, and some cruise missiles.

Its flexibility allows it to defend both fixed installations and mobile units, which is vital in modern combat scenarios. With an effective operational range of up to 40 kilometers (approximately 25 miles) against aerial threats, NASAMS utilizes the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM).

In contrast, the Patriot missile system offers long-range defense capabilities. It is capable of intercepting an extensive array of threats, including tactical ballistic missiles, cruise missiles, and advanced aircraft. With a range of up to 160 kilometers (99 miles), the Patriot system's modular design allows for various configurations, which ensures adaptability to specific mission requirements.

On the other hand, THAAD specializes in ballistic missile defense, focusing on intercepting short-, medium-, and intermediate-range ballistic missiles during their terminal phase. By prioritizing high-altitude interception, THAAD minimizes potential collateral damage, making it an essential asset for nations facing missile threats. It can engage targets at distances ranging from 150 to 200 kilometers (93 to 124 miles), contributing to a layered defense approach against incoming threats.

The capabilities of NASAMS, Patriot, and THAAD complement each other, creating a powerful defense network. NASAMS leverages the AIM-120 AMRAAM missile, launched from ground-based platforms, and employs a networked engagement approach for efficient target tracking and management of multiple simultaneous threats. The Patriot system utilizes various missile types, primarily the PAC-2 and PAC-3, equipped with advanced guidance and interception technologies, further enhancing its effectiveness. This integration allows Taiwan to respond dynamically to different aerial threats, thereby improving its overall operational readiness.

Meanwhile, THAAD relies on hit-to-kill technology for intercepting ballistic missiles, using kinetic energy to neutralize incoming threats. Its advanced radar systems ensure precise tracking and targeting.

<https://www.eurasiantimes.com/1st-asymmetric-warfare-capable-systems/>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Mon, 28 Oct 2024

Stakeholders meeting on call for proposals under MAHA-EV Mission brings together experts to drive India's smart transport research

Researchers, industry leaders and experts across India working on various aspects of Electric Mobility, came together at the stakeholders meeting organised under the Mission for Advancement in High-impact Areas (MAHA) Electric Vehicle (EV) Mission to discuss collaborative efforts for advancing the country's e-mobility ecosystem.

“We have launched this mission to support India's shift to sustainable mobility in line with national goals. The importance of e-mobility within our automobile sector cannot be overstated. This mission is designed to catalyse innovation and collaboration among stakeholders, ensuring India

builds robust expertise in EV technology,” said Professor Ajay K Sood, Principal Scientific Adviser to the Government of India, at the meeting organised at Vigyan Bhawan to facilitate submission of proposals in response to the call on MAHA-EV--one of the first calls of the newly operationalized Anusandhan National Research Foundation.

Secretary, Department of Science and Technology and CEO, ANRF, Professor Abhay Karandikar, highlighted the ambitious goals of the MAHA-EV Mission. “We have initiated significant investments through ANRF, establishing a high-powered governing board to guide mission strategy. The MAHA-EV Mission aims to foster advancements in EV battery technology, power electronics, and charging infrastructure. We have opened the call for proposals in consortia mode to enable interdisciplinary research and development across institutions, research labs and industry,” Professor Karandikar pointed out.

The first call from ANRF on the MAHA-EV mission which aims to boost India's expertise in EV battery technology, strengthen R&D in power electronics, machines and drives and improve charging infrastructure, is designed to fast-track translational research, innovation and technological breakthroughs in this area of national priority and bring about global impact.

The enthusiasm of the participants gathered at the stakeholder’s meeting underlined India’s commitment to sustainable transportation and to the development of indigenous R&D in electric mobility.

The meeting served as an interactive platform, with over 300 participants representing academia, government agencies, and industry joining in person and through online mode. They interacted with the senior government officials to clear their doubts for preparing to submit their proposals for the current call under MAHA-EV Mission.

Dr. Shashi Bhushan Pandey, Program Coordinator of the EV Mission at ANRF stressed that fostering such partnerships would lead to substantial advancements in India’s EV landscape.

On the sidelines of this event, Prof. Abhay Karandikar, Secretary, DST unveiled three thematic R&D Roadmaps on Tropical EV Battery, Power Electronics, Machines and Drives and EV Charging Infrastructure, which were prepared by DST. Simultaneously, soft copy of these reports was also uploaded on DST Website.

Earlier, DST published a White Paper on eMobility, which was followed by release of eMobility R&D Roadmap by PSA Office. The culmination of these two reports along with three thematic R&D Roadmaps resulted into creation of Mission for Advancement in High-impact Areas (MAHA): EV-Mission, which will be run by ANRF.

The brainstorming meeting was also attended by Dr. Anita Gupta, Head, Climate, Energy and Sustainable Transport (CEST) and other senior DST and ANRF Officials.

The MAHA-EV initiative aspires to elevate India’s standing in the global EV sector and contribute to the development of competitive, sustainable electric mobility technologies.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2068784>



Indigenous herbal knowledge recognised through patents

Custodians of herbal traditional knowledge from Jammu & Kashmir and Gujarat were granted herbal patents at felicitation programs held earlier at the University of Kashmir and subsequently at the National Innovation Foundation, Gandhinagar on October 22, 2024.

India has been bestowed with rich resource of traditional herbal knowledge systems. These valuable systems are being preserved, sustained by outstanding traditional knowledge holders across the nation enabling sustainability of natural resources. Knowledge holders interact within their ecological system and possess deep understanding of local flora accumulated through experiences, experiments and wisdom.

These practices are tools for solving challenges in human health and agriculture including livestock at their locale. With rising concern on environmental hygiene, antimicrobial resistance, these sustainable practices are gaining importance. Such herbal medicines have to be recognized, scientifically valorised for integrating in health care system.

The National Innovation Foundation-India (NIF) has been pivoting protection of indigenous knowledge system of the country. NIF had incubated large pool of outstanding traditional knowledge practices and protected this wisdom through Intellectual Property [IP] Rights. Several of these technologies were IP protected to create opportunity in scaling up technologies for social benefit.

Protecting these health traditions with scientific evidence can augment link between informal and formal system for larger social goals.

Working towards this, the National Innovation Foundation (NIF), an autonomous institution of the Department of Science and Technology (DST) recognised 26 outstanding knowledge holders with herbal patent grants. This will facilitate in scaling up of technologies for commercial and social ventures.

Such knowledge protection and recognition can help to advance the scientifically proven herbal practices in terms of technology readiness level and to forge industry partnerships. These collaborative efforts could pave the path towards indigenous cost-effective solutions for public health concerns.

Such initiatives are vital for India's herbal heritage and emphasize the critical requirement for sustainable practices that can enhance foster economic growth and community resilience. These features highlight importance of safeguarding indigenous knowledge while paving the way towards development of sustainable practices as well as in pharmaceutical development of herbal

medicinal products. Encouraging these technologies helps to complement health system with novel therapeutic/supportive products.

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When AI changes the way we do science, will we understand the results?

Artificial intelligence (AI) has taken centre stage in basic science. The five winners of the 2024 Nobel Prizes in chemistry and physics shared a common thread: AI. Indeed, many scientists – including the Nobel committees – are celebrating AI as a force for transforming science. As one of the laureates put it, AI’s potential for accelerating scientific discovery makes it “one of the most transformative technologies in human history”.

But what will this transformation really mean for science? AI promises to help scientists do more, faster, with less money. But it brings a host of new concerns, too – and if scientists rush ahead with AI adoption they risk transforming science into something that escapes public understanding and trust, and fails to meet the needs of society.

The illusions of understanding

Experts have already identified at least three illusions that can ensnare researchers using AI. The first is the “illusion of explanatory depth”. Just because an AI model excels at predicting a phenomenon — like AlphaFold, which won the Nobel Prize in Chemistry for its predictions of protein structures — that doesn’t mean it can accurately explain it. Research in neuroscience has already shown that AI models designed for optimised prediction can lead to misleading conclusions about the underlying neurobiological mechanisms. Second is the “illusion of exploratory breadth”.

Scientists might think they are investigating all testable hypotheses in their exploratory research, when in fact they are only looking at a limited set of hypotheses that can be tested using AI. Finally, the “illusion of objectivity”. Scientists may believe AI models are free from bias, or that they can account for all possible human biases. In reality, however, all AI models inevitably reflect the biases present in their training data and the intentions of their developers.

Cheaper and faster science

One of the main reasons for AI’s increasing appeal in science is its potential to produce more results, faster, and at a much lower cost. An extreme example of this push is the “AI Scientist” machine recently developed by Sakana AI Labs.

The company’s vision is to develop a “fully AI-driven system for automated scientific discovery”, where each idea can be turned into a full research paper for just US\$15 – though critics said the system produced “endless scientific slop”.

Do we really want a future where research papers can be produced with just a few clicks, simply to “accelerate” the production of science? This risks inundating the scientific ecosystem with papers with no meaning and value, further straining an already overburdened peer-review system. We might find ourselves in a world where science, as we once knew it, is buried under the noise of AI-generated content.

The rise of AI in science comes at a time when public trust in science and scientists is still fairly high, but we can’t take it for granted. Trust is complex and fragile. As we learned during the COVID-19 pandemic, calls to “trust the science” can fall short because scientific evidence and computational models are often contested, incomplete, or open to various interpretations.

However, the world faces any number of problems, such as climate change, biodiversity loss, and social inequality, that require public policies crafted with expert judgement. This judgement must also be sensitive to specific situations, gathering input from various disciplines and lived experiences that must be interpreted through the lens of local culture and values.

As an International Science Council report published last year argued, science must recognise nuance and context to rebuild public trust. Letting AI shape the future of science may undermine hard-won progress in this area. If we allow AI to take the lead in scientific inquiry, we risk creating a monoculture of knowledge that prioritises the kinds of questions, methods, perspectives and experts best suited for AI.

This can move us away from the transdisciplinary approach essential for responsible AI, as well as the nuanced public reasoning and dialogue needed to tackle our social and environmental challenges.

A new social contract for science

As the 21st century began, some argued scientists had a renewed social contract in which scientists focus their talents on the most pressing issues of our time in exchange for public funding. The goal is to help society move toward a more sustainable biosphere – one that is ecologically sound, economically viable and socially just.

The rise of AI presents scientists with an opportunity not just to fulfil their responsibilities but to revitalise the contract itself. However, scientific communities will need to address some important questions about the use of AI first. For example, is using AI in science a kind of “outsourcing” that could compromise the integrity of publicly funded work? How should this be handled? What about the growing environmental footprint of AI? And how can researchers remain aligned with society’s expectations while integrating AI into the research pipeline?

The idea of transforming science with AI without first establishing this social contract risks putting the cart before the horse. Letting AI shape our research priorities without input from diverse voices and disciplines can lead to a mismatch with what society actually needs and result in poorly allocated resources. Science should benefit society as a whole.

Scientists need to engage in real conversations about the future of AI within their community of practice and with research stakeholders. These discussions should address the dimensions of this renewed social contract, reflecting shared goals and values.

It's time to actively explore the various futures that AI for science enables or blocks – and establish the necessary standards and guidelines to harness its potential responsibly.

<https://www.thehindu.com/sci-tech/science/when-ai-changes-the-way-we-do-science-will-we-understand-the-results/article68803094.ece>

