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Business Standard

Thu, 14 Mar 2024

Ex-DRDO chairman Reddy hails Divyastra, calls it a game-changer for forces

Hailing 'Mission Divyastra', the successful flight test of the Agni-5 missile conducted by the Defence Research and Development Organisation (DRDO), the former chief of the agency, G Satheesh Reddy, on Wednesday said it was a 'game-changer' for armed forces.

The missile is equipped with the MIRV (multiple independently targettable reentry vehicle) technology, enabling it to launch multiple warheads at different targets at the same time. Prime Minister Narendra Modi came out in praise of the DRDO after the successful launch of 'Mission Divyastra', which put India in an elite club of nations to have developed the MIRV tech.

Speaking to ANI on Wednesday, the former DRDO chief said, "We have developed long-range missiles, with the Agni-5 being the latest in our inventory. The Agni-5 is equipped with the MIRV tech, enabling the launch of multiple warheads at the same time. We have multiple payloads now that can be used to strike targets lying at a distance of a few hundred kilometres simultaneously. The enemy wouldn't have a chance to react and strike back, as its missile defence would be disabled. So, 'Divyastra' is undoubtedly a game-changer for our armed forces. It is equipped with a technologically advanced system and will add significantly to the might of our defence forces."

He added that Prime Minister Narendra Modi directed that this mission be accomplished through the use of advanced technologies. "Having already developed long-range missiles, the MIRV technology was something our scientists had been working on for a couple of years. If this tech can be used in Agni-5, it could be put to use in other missiles as well. However, the need for this tech would depend on the strike range of the missile, whether it merits being MIRV-enabled, what range you want to strike at and other such factors," he added.

"But having worked on similar technologies before, I can say that the PM, himself, directed our scientists to pursue a mission of this kind. I believe that it was on his orders that the scientists took up this mission in earnest and developed this missile. The flight test met with success and all mission objectives were accomplished," Reddy added. Underscoring the contribution of women scientists, who were majorly involved in this mission, the former DRDO chief added, "Many women scientists are working in defence research and development, contributing a lot to the development of new-age technologies. They are working in various positions (in the DRDO)."

Be it project directors, program directors, lab directors or director generals, our women scientists are at the front and centre of the development of new defence techs. They have been playing a very important role in the emergence of many new technologies and systems development. As for the MIRV, many women scientists, technological officers and technicians have worked on it. The contribution of women in the development of MIRV has been immense."

Earlier, on Monday, the DRDO conducted its first successful flight test of an indigenously developed Agni-5 missile with Multiple Independently Targetable Reentry Vehicle (MIRV) technology. The flight test, named Mission Divyastra, was carried out from Dr APJ Abdul Kalam Island in Odisha. Various telemetry and radar stations tracked and monitored multiple re-entry vehicles. The mission accomplished the designed parameters.

Lauding the efforts of the DRDO scientists who participated in the conduct of the complex mission, PM Modi posted from his X handle, "Proud of our DRDO scientists for Mission Divyastra, the first flight test of indigenously developed Agni-5 missile with Multiple Independently Targetable Re-entry Vehicle (MIRV) technology."

Defence Minister Rajnath Singh also congratulated the scientists and the entire team, terming it as an exceptional success.

https://www.business-standard.com/external-affairs-defence-security/news/ex-drdo-chairman-reddy-hails-divyastra-calls-it-a-game-changer-for-forces-124031400045_1.html

Defence News

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Wed, 13 Mar 2024

12th edition of India-Italy Military Cooperation Group Meeting concludes in New Delhi

The 12th edition of India-Italy Military Cooperation Group (MCG) Meeting was held on 12-13 Mar 24 in New Delhi. The discussions between the Directorate of International Defence Cooperation, Headquarters Integrated Defence Staff and the Military Policy and Planning Division of the

Italian Defence General Staff focused on new initiatives to further enhance the defence cooperation and military to military level exchange between the two countries.

Italy and India recently elevated their bilateral relations to the levels of Strategic Partnership during the visit of Italian Prime Minister Ms Giorgia Meloni to India in March 2023. The MoU on Defence Cooperation was also recently renewed during the visit of the Raksha Mantri Shri Rajnath Singh to Italy in October 2023.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2014356>



Press Information Bureau
Government of India

Ministry of Defence

Wed, 13 Mar 2024

MoD signs contracts worth Rs 8073 Cr with HAL for acquisition of 34 Advanced Light Helicopters (ALH) Dhruv Mk III for Indian Army & Indian Coast Guard

Consequent upon approval of the Cabinet Committee on Security (CCS), the Ministry of Defence signed two contracts for a combined value of Rs 8073.17 crore with Hindustan Aeronautics Limited (HAL), Bengaluru on 13 March 2024 for acquisition of 34 Advanced Light Helicopters (ALH) Dhruv Mk III along with Operational Role Equipment for Indian Army (25 ALHs) and Indian Coast Guard (09 ALHs) under Buy (Indian-IDDMM - Indigenously Designed, Developed & Manufactured) category marking a significant move towards indigenisation in defence manufacturing.

The ALH Dhruv Mk III UT (Utility), the Indian Army version, is designed for Search & Rescue, Troop Transportation, Internal Cargo, Recce/ Casualty Evacuation etc. It has proved its performance in high altitude regions like Siachen Glacier and Ladakh.

The ALH Mk III MR (Maritime Role), the ICG version, is designed for Maritime Surveillance and Interdiction, Search and Rescue, Rappelling Operations and also for Cargo & Personnel Transportation, Pollution Response using external cargo carrying capability and Medical Casualty Evacuation. It has proved its mettle even in adverse atmospheric conditions over sea and land.

The project will generate employment of an estimated 190 Lakh Man-Hours during its duration. It will also entail supply of equipment from more than 200 MSMEs and 70 local vendors will be involved in the indigenisation process which is likely to have a positive impact on employment generation in this sector, thus furthering the vision of 'Aatmanirbhar Bharat'.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2014340>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 13 Mar 2024

**10th India-Italy Joint Defence Committee meeting held in
New Delhi**

**Defence Secretary and Italian Secretary General of Defence &
National Armament Director focus on enhancing industrial
cooperation**

Defence Secretary Shri Giridhar Aramane and Italian Secretary General of Defence & National Armament Director Lt Gen Luciano Portolano co-chaired the 10th India-Italy Joint Defence Committee (JDC) meeting in New Delhi on March 13, 2024. Both sides discussed a wide range of defence industrial and military cooperation issues. They also exchanged views on the Indo-Pacific and the security situations.

The focus of the meeting was to enhance defence industrial cooperation. India and Italy had signed an agreement on defence cooperation in October 2023 during the visit of Raksha Mantri Shri Rajnath Singh to Italy. With the agreement providing the overarching framework to deepen the bilateral defence relationship, both sides discussed ways and means to bring the defence companies of both the countries together for joint projects, including for co-production in India.

The Defence Secretary suggested the integration of Indian vendors in the global supply chains of Italian defence companies to bring value to both sides and improve the supply chain resilience.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2014219>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 13 Mar 2024

**Launch of 'Agray' and 'Akshay' Fifth and Sixth Ship of ASW
SWC (GRSE) Project on 13 Mar 24 at M/S GRSE Kolkata**

'Agray' and 'Akshay', the 5th and 6th ships of 08 x ASW Shallow Water Craft (SWC) Project being built by M/S GRSE for Indian Navy, were launched on 13 Mar 24 at M/S GRSE, Kolkata. The

Launch Ceremony was presided over by Air Chief Marshal V R Chaudhari, Chief of the Air staff. In keeping with maritime tradition, Mrs Neeta Chaudhari, President AFFWA, launched the ships to the invocation from Atharva Veda. The ships have been rechristened as Agray and Akshay, named after erstwhile Abhay Class Corvettes Agray and Akshay of Indian Navy.

The contract for building eight ASW SWC ships was signed between MOD and Garden Reach Shipbuilders & Engineers (GRSE), Kolkata on 29 Apr 19.

Arnala class of ships will replace the in-service Abhay class ASW Corvettes of Indian Navy and are designed to undertake anti-submarine operations in coastal waters, Low Intensity Maritime Operations (LIMO) and Mine Laying Operations. The ASW SWC ships are 77.6 m long & 105 m wide with a displacement of 900 tons and endurance of over 1800 NM

In the last one year, 03 indigenously built warships/ submarine for Indian Navy have been delivered and a total of 09 warships were launched. The launch of two more ships of the project highlights the nation's resolve towards 'Aatmanirbhar Bharat' in shipbuilding. The first ship of the project is planned to be delivered during the first half of 2024.

The ASW SWC ships will have over 80% indigenous content, thereby ensuring that large scale defence production is executed by Indian manufacturing units, generating employment and capability enhancement within the country.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2014425>

THE ECONOMIC TIMES

Wed, 13 Mar 2024

Infantry Combat Vehicle Upgrades: Govt inks deal with AVNL

The Ministry of Defence on Wednesday signed a contract with Armoured Vehicles Nigam Limited (AVNL) for procurement of 693 armament upgrades of infantry combat vehicle BMP2, according to an official statement "This upgrade includes night enablement, gunner main sight, commander panoramic sight and fire control system (FCS) with automatic target tracker under Buy (IndianIndigenously Designed Developed and Manufactured) Category," the statement said

The AVNL has developed an "indigenised solution for providing existing BMP 2/2K with night fighting capabilities and FCS based on the integration of Defence Research and Development Organisation (DRDO) and Bharat Electronics Limited (BEL), Chennai-developed sight and FCS," it said.

The ministry signed the contract with AVNL "for the procurement of 693 Armament Upgrades of Infantry Combat Vehicle BMP2 to BMP2M".

The AVNL will produce the "armament upgrades with equipment and subsystems sourced from indigenous manufacturers", the ministry said. This will further strengthen the indigenous defence manufacturing ecosystem and accrue the benefits of the increasing self-reliance in this field, it said.

<https://economictimes.indiatimes.com/news/defence/infantry-combat-vehicle-upgrades-govt-inks-deal-with-avn/articleshow/108471629.cms>

DECCAN Chronicle

Wed, 13 Mar 2024

IAF Chief: Attacks in Red Sea a Threat to Maritime Domain

Indian Air Force (IAF) chief Air Chief Marshal Vivek Ram Chaudhari underlined on Wednesday that the recent attacks on the ships in the Red sea have created threats in the global maritime domain. He said, "Today sea-line communications are an important contributor to world trade and prosperity. Recent events particularly in the Red Sea have highlighted the threats in maritime environment across the globe."

The IAF chief added, "A large number of Indian naval ships are patrolling the high seas and rendering assistance to safeguard the seafarers and merchant vessels of different nationalities." He was speaking at the launch of two anti-submarine warfare shallow water crafts (ASW SWC), INS Agray and INS Akshay, being built by Garden Reach Shipbuilders and Engineers (GRSE) in the city for the Indian Navy.

The two warships were launched by Neeta Chaudhari, wife of the IAF chief, at a ceremony. They are the reincarnations of Abhay-class warships of the Indian Navy. While the original INS Agray was decommissioned in 2017, INS Akshay was decommissioned in 2022.

The two warships were fifth and sixth in a series of eight ASW SWCs being built by the defence PSU. These 77.6-metre-long and 10.5-metre-wide extremely potent warships are capable of full-scale subsurface surveillance of coastal waters, various surface platforms and coordinated anti-submarine operations with aircraft.

They can reach maximum speeds of 25 knots and pack a lethal anti-submarine suite comprising lightweight torpedoes, ASW rockets and mines.

<https://www.deccanchronicle.com/nation/iaf-chief-attacks-in-red-sea-a-threat-to-maritime-domain-885111>

Why India's defence sector is a true success story

Prime Minister Narendra Modi on Tuesday, March 12, visited the Pokhran firing range in Rajasthan to observe the Bharat Shakti exercise, where the prowess of indigenously manufactured defence equipment was showcased. The day before, the Defence Research and Development Organisation successfully tested a new-age Agni-5 ballistic missile equipped to carry multiple warheads, each capable of hitting a separate target.

India Today's Data Intelligence Unit analysed the defence production and export of the country and found that India's defence export grew from Rs 1,521 crore in 2016-17 to Rs 16,954 crore in 2023-24 (as of March 8). According to the Stockholm International Peace Research Institute, between 2000 and 2023, Myanmar remained the largest importer of Indian weapons, accounting for 31 per cent of India's exports. Sri Lanka followed at 19 per cent. Mauritius, Nepal, Armenia, Vietnam, and Maldives were other major importers.

Indian ships are the most attractive defence commodity, accounting for 61 per cent of the country's total defence exports. This is followed by aircraft at 20 per cent, sensors at 14 per cent, armoured vehicles at 2.8 per cent, and artillery at 1.1 per cent. India's defence production grew substantially from Rs 74,054 crore in 2016-17 to Rs 108,684 crore in 2022-23. Out of this, 21.96 per cent of the production was done by private companies.

Modi, before visiting Pokhran, said in a post on X, "I look forward to being in Pokhran later today. This place has an emotional attachment with every Indian. In Pokhran, I will have the opportunity to witness a demonstration of indigenous defence capabilities in a Tri-Services Live Fire and Manoeuvre Exercise. I am glad that this programme will feature weapon systems and more which are vital in the quest to make India self-reliant in defence."

<https://www.indiatoday.in/diu/story/india-defence-sector-exports-drdo-military-diu-2514353-2024-03-13>

THE ECONOMIC TIMES

China says military delegation visited Maldives, Sri Lanka and Nepal

A Chinese military delegation recently visited the Maldives, Sri Lanka and Nepal to discuss further cooperation in defence issues, Beijing said Wednesday. Beijing is seeking to build closer ties in South Asia in a push to counter its strategic rival India for influence. Last week, the Maldives said

it had signed a "military assistance" deal with China after ordering Indian troops deployed in the small but strategically placed archipelago to leave.

And Beijing confirmed Wednesday that a delegation had visited the country and met with pro-China President Mohamed Muizzu during a trip that also took them to Sri Lanka and Nepal from March 4 to 13.

In all three countries, "they exchanged views on military relations and regional security issues of common concern", the Chinese military said in a statement on its official WeChat account. The delegation of officials from the military's international military cooperation department focused on "in-depth consultations on promoting bilateral defence cooperation".

"A series of consensus was reached to further enriched defence cooperation between the PLA and the relevant countries," it added, referring to the Chinese military by its official acronym. India is suspicious of China's growing presence in the Indian Ocean and its influence in the Maldives, a chain of 1,192 tiny coral islands stretching around 800 kilometres (500 miles) across the equator, as well as in neighbouring Sri Lanka. Both South Asian island nations are strategically placed halfway along key east-west international shipping routes.

Beijing also enjoys close ties with Nepal, led by Prime Minister Pushpa Kamal Dahal, an ex-Maoist guerrilla known by his nom de guerre Prachanda.

ISRO's Reusable Launch Vehicle Pushpak Gears Up For Second Landing Test.

<https://economictimes.indiatimes.com/news/defence/china-says-military-delegation-visited-maldives-sri-lanka-and-nepal/articleshow/108460281.cms>

Science & Technology News

R. REPUBLICWORLD.COM

ISRO's Reusable Launch Vehicle Pushpak Gears Up For Second Landing Test

Wed, 13 Mar 2024

The Indian Space Research Organisation (ISRO) is making strides towards conducting the second landing test of its Reusable Launch Vehicle (RLV), Pushpak. ISRO is dedicated to developing crucial technologies for a fully reusable launch vehicle, aiming to facilitate cost-effective access to space. This endeavour aligns with ISRO's ambitious plans to establish a space station by 2035. Reports have claimed that the upcoming landing test of Pushpak is expected to take place by the end of this month. However, a final date is yet to be released by the space agency.

During his recent visit to the Vikram Sarabhai Space Centre, Prime Minister Narendra Modi was briefed by ISRO chief S Somnath regarding the progress of the vehicle's development. The winged RLV prototype serves as a versatile test platform, facilitating the evaluation of hypersonic flight, autonomous landing, and powered cruise capabilities. Following approval from the National Review Committee in January 2012, ISRO's design for the RLV spacecraft received the green light. Subsequently, the initial prototype was constructed and named the RLV-TD (Technology Demonstrator).

In 2016, leveraging advanced supercomputer simulations and the expertise of the National Aerospace Laboratory and the Defence Research and Development Organisation (DRDO), the RRLV embarked on its inaugural flight. This journey was made possible through the development of heat-resistant materials crucial for safeguarding the spacecraft during atmospheric re-entry. The autonomous landing mission executed on April 2, 2023, stood as a vital moment for the Pushpak RLV, advancing its journey toward achieving orbital re-entry capabilities. This successful experiment showcased the vehicle's prowess in executing unmanned, precise landings at high speeds, replicating conditions akin to space re-entry.

The Pushpak RLV is meticulously crafted as an all-rocket, fully reusable single-stage-to-orbit (SSTO) vehicle, drawing inspiration from several key components such as the X-33 advanced technology demonstrator, the X-34 testbed technology demonstrator, and the upgraded DC-XA flight demonstrator.

<https://www.republicworld.com/india/isro-s-reusable-launch-vehicle-pushpak-gears-up-for-second-landing-test/>



Wed, 13 Mar 2024

India's R&D funding, breaking down the numbers

-By Animesh Jain & Anurag Anand

The announcement in the interim Budget for 2024-25, of a corpus of ₹1 lakh crore to bolster the research and innovation ecosystem within the country, has sparked enthusiasm within the scientific and research communities. The decision to rebrand the slogan, 'Jai Jawan Jai Kisan' (by Lal Bahadur Shastri) to 'Jai Jawan, Jai Kisan, Jai Vigyan' (A.B. Vajpayee) to now 'Jai Jawan, Jai Kisan, Jai Vigyan, Jai Anusandhan' (by the Prime Minister) is intended to reinforce the foundation of research and innovation for development.

The significance of research and innovation cannot be overstated in fuelling economic growth, technological advancement, and global competitiveness. However, to fully realise the impact, it is crucial to assess the current research and development (R&D) funding landscape in India and its resulting output.

This entails examining India's comparatively lower R&D expenditure as a percentage of GDP alongside its noteworthy output in terms of patent grants, PhDs awarded, and publication outputs.

Analysing the quality of this output is equally imperative in understanding the true implications of these initiatives.

India's R&D is witnessing significant growth, with a notable increase in Gross Expenditure on Research and Development (GERD) from ₹6,01,968 million in 2010-11 to ₹12,73,810 million in 2020-21. However, with research and development investment as a percentage of GDP standing at 0.64%, India falls behind major developed and emerging economies such as China (2.4%), Germany (3.1%), South Korea (4.8%) and the United States (3.5%).

Research output, innovation Despite the comparatively lower share of GDP dedicated to R&D, India has emerged as a powerhouse in producing academic talent. Annually, India generates an impressive 40,813 PhDs and is in third place after the United States and China. This achievement reflects India's commitment to fostering intellectual capital and contributing significantly to global research endeavours.

Additionally, India's research output remains substantial, ranking third globally, with over 3,00,000 publications in 2022, highlighting the nation's robust research ecosystem and its commitment to advancing knowledge across diverse fields. India also demonstrates commendable performance in patent grants, securing the sixth position globally with 30,490 patents granted in 2022.

While this figure is lower compared to the U.S. and China, it underscores India's evolving innovation landscape and its potential for further growth in intellectual property creation. In India, GERD is primarily driven by the government sector, including the central government (43.7%), State governments (6.7%), Higher Education Institutions (HEIs) (8.8%), and the public sector industry (4.4%), with the private sector industry contributing only 36.4% during 2020-21. Collaboration between the government, business enterprises and HEIs is essential to maximise the positive impact of science, technology, and innovation on economic growth and technological advancement.

Investment in R&D According to the R&D statistics (2022-23) of the Department of Science and Technology, India's total investment in R&D reached \$17.2 billion in 2020-21. Within this sum, 54% (\$9.4 billion) is allocated to the government sector and predominantly utilised by four key scientific agencies — the Defence Research and Development Organisation (30.7%), the Department of Space (18.4%), the Indian Council of Agricultural Research (12.4%), and the Department of Atomic Energy (11.4%).

A significant portion of R&D funding originates from the government, with considerable allocation directed towards autonomous R&D laboratories operated by the government. These laboratories serve a pivotal role in driving research and technology development with strategic implications. This symbiotic relationship between government funding, R&D execution, and strategic focus underscores the integral role of the government in steering and fostering key scientific advancements.

However, the contribution of private industries lags behind that of many other economies. At approximately \$6.2 billion, Indian businesses represent 37% of the country's GERD, in contrast to the global trend, where business enterprises typically contribute over 65% of R&D. In leading innovative economies such as China, Japan, South Korea, and the U.S., a significant portion (>70%) of R&D funding is from private industries, driven by market forces and profit motives, and the actual R&D activities are conducted in the HEIs.

India's R&D ecosystem has its advantages in terms of efficiency, but could benefit more from strong private enterprises involvement and stronger industry-academia collaboration, facilitating knowledge transfer and fostering innovation. HEIs play a comparatively minor role in the overall R&D investment, contributing 8.8% (\$1.5 billion). It is important to recognise that increasing industry contribution to R&D is a complex issue with no single solution. A multi-pronged approach involving diverse stakeholders is necessary to address the challenges and unlock the potential of R&D for India's economic growth and competitiveness.

Learning from the R&D ecosystem in other developed countries while maintaining India's strengths in streamlined decision-making and strategic alignment could be a powerful force to optimise its R&D landscape. India must implement policies that incentivise private companies to invest in R&D. Impact of initiatives India's technological and manufacturing aspirations hinge on a transformative shift in its R&D landscape. Closing the existing gap demands a dual strategy: encouraging private sector involvement and fortifying academia's research infrastructure. Initiatives such as the National Deep Tech Startup Policy (NDTSP) signal a strong commitment to technological progress and innovation. This policy holds the potential to incentivise private sector engagement in India's R&D ecosystem.

Despite the substantial time and technical uncertainties involved in Deep Tech's creation, allocating resources to safeguard intellectual property and tackle technical obstacles can unlock untapped markets. The recent enactment of the Anusandhan National Research Foundation (ANRF) Act, underscores the government's dedication to catalysing research and innovation as the cornerstone of development. This legislative move will bolster scientific research nationwide.

The Act aims to bridge India's persistent R&D investment gap while nurturing a robust research culture within HEIs. Although promising, this initiative must surmount challenges such as ensuring equitable fund distribution, fostering interdisciplinary collaborations, and upholding global standards. These efforts are poised to elevate R&D spending in India, providing strategic guidance for research, innovation, and entrepreneurship while encouraging greater private sector involvement. The interim Budget, combined with the NDTSP and ANRF Act, sends positive signals regarding India's commitment to incentivising private sector-led research and innovation, particularly in burgeoning industries.

<https://www.thehindu.com/opinion/lead/indias-rd-funding-breaking-down-the-num-bers/article67947662.ece#:~:text=India's%20R%26D%20is%20witnessing%20significant,73%2C810%20million%20in%202020%2D21.>

