GOVERNMENT OF INDIA
MINISTRY OF DEFENCE
DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION
LOK SABHA
UNSTARRED QUESTION NO. 1029
TO BE ANSWERED ON 25th July, 2025

DEVELOPMENT OF NEW DEFENCE TECHNOLOGIES BY DRDO

1029. SHRI ANUP SANJAY DHOTRE:

Will the Minister of DEFENCE be pleased to state:

(a) the details of recent accomplishments of the Defence Research and Development Organisation (DRDO) in developing new defence technologies;

(b) the manner in which the Government is promoting collaboration between DRDO, academic institutions and private startups;

(c) the details of existing initiatives to fast-track the development and deployment of emerging technologies like artificial intelligence, robotics and hypersonics;

(d) whether these schemes attracts youth and innovators into defence research careers and if so, the details thereof; and

(e) the manner in which the Government ensures intellectual property protection and commercialization of defence innovations?

A N S W E R

MINISTER OF STATE (SHRI SANJAY SETH)
IN THE MINISTRY OF DEFENCE

(a) DRDO has successfully completed 138 projects during the last three years. Yearly break-up is

Year	No. of projects completed	Cost (Rs. in Cr.)
01-Jan-2023 to 31-Dec-2023	48	Rs. 4269.27 Cr.
01-Jan-2024 to 31-Dec-2024	60	Rs. 3989.97 Cr.
01-Jan-2025 till date	30	Rs. 1859.89 Cr.

Some of the major Projects completed are:

Nag Mk-2, Astra Mk-2, Dhruvastra-Air to Surface Missile, Anti-Tank Guided Missile for MBT Arjun MK-II, Solid Fuel Ducted Rocket Ramjet Technology for Air Launched Tactical Missiles, Anti-Drone Air-Defence System, Mission Planning System and Dual mode Seekers for Terminal Guidance, Radome for AESA Radar, Hemispherical Resonating Gyroscope (HRG), Terahertz Proximity Sensor, Delivery of Third AEW&C Aircraft System to IAF,

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High-Speed expendable Aerial Target 'Abhyas', Unmanned Small Airship System, Anti-Icing System of a Gas Turbine Engine, Heavy Drop System for C-130 & C-17 Aircraft, Assault Rifle, Light Machine Gun, Mounted Gun System, Improved Propulsion System for 120mm & 125mm Tank Gun Ammunition, Futuristic High Explosive Technologies, Landing Gear for 1 t class UAV, Wheeled Armoured Platform (WhAP) CBRN, Supersonic Missile Assisted Release of Torpedo, Advanced Technologies for Torpedo Defence System, Ground based Integrated EW Systems, Discrete and Portable COMINT Stations for Mountains, EW Systems for Capital Ships, Aircrafts & Helicopter of Indian Navy, NextGen Microwave Receiver Modules for EW Applications, D-Jag System Internal RWJ System for Jaguar DARIN III Upgrade Aircraft, Tactical Radios for Land Systems, Data Links for Airborne Platforms, Compact Transhorizon Communication System, Advanced SATCOM Technologies & System, InfraRed Search and Track Technologies, Hyper Spectral Imaging Technologies & Infrastructure, Advanced Laser Threat Detection System for Armoured Fighting Vehicles, Micro-optics and Freeform Optics based Devices, Ku-band Transmitter for Mobile Troposcatter System, Laser Ordnance Disposal System for Indian Army, Beam Combined Fiber Laser Source, Photonics Radar, Surface Wave Over The Horizon Radar, Operational Planning and Management System, Indigenous Geographical Information System for Tri-Services, Laser Diode Technology, GaN HEMT based MMICs for Applications up to X-band, Nuclear Defence Technologies for Armed Forces, Biomechanical Human Endurance Machine, Thermal Infrared Signature Technologies, Oxygen Solution for High and Extreme Altitudes etc.

(b) DRDO, Industry and Academic Institutes are collaborating for carrying out Directed Research and translating research to technology for strengthening the future requirements of national safety and security. To support the engagement of startups, MSMEs and private industry, Long Term Directed Research Policy of industry engagement through academia has been launched. The policy provides the guidelines for involving the industry in DIA-COE projects either through ToT or for Technology Enhancement by engaging industry as Co-PI (Principal Investigator).

Directorate of ER&IPR, under the Grants-in-Aid (GIA) scheme, supports research activities in academic institutions and R&D centres for the development of technologies for its ongoing and future projects. The GIA funding is provided through Extramural Research (ER) Scheme and four Research Boards (RBs), namely, Aeronautics Research & Development Board (AR&DB), Armament Research Board (ARMREB), Naval Research Board (NRB), and Life Sciences Research Board (LSRB). Directorate of ER&IPR provides funding support to Indian Academia and R&D Centres for basic and applied research where current TRL of the proposed technology is between 1 and 3.

The funding opportunity is equally open to all the Institutions/ Colleges/ Universities/ R&D Centres and the directorate gives weightage to the requirement of DRDO labs and the expertise of the investigator.

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Technology Development Fund (TDF) Scheme is a unique mechanism to integrate the public and private sector industries especially MSMEs and startups that may work in collaboration with the academia or research institutions to carry out innovation, research and development of defence and dual use technologies under the mentorship of DRDO.

(c) Deep Tech areas including AI, Quantum Technology, Directed Energy, Advanced Materials, Hypersonic, UAVs etc. are identified by the competent authority. DIA-CoEs are also carrying research in these specialized areas as per their identified research verticals. To fast track the development and deployment process, project proposal format are revised/improved, flexibility of recruiting research manpower in projects, flexibility to use available funds among different heads of project expenditure without immediate concurrence and also joint Academia-Industry project SOP is promulgated.

(d) The following schemes are available in DRDO to attract youth and innovators into defence research careers: -

(i) Scheme of Research Fellowships: DRDO introduced a scheme of Research Fellowships to provide opportunity to bright, young scientists or engineers to carry out research work leading to earning of higher qualification or for acquisition of research experience. In addition to this, 500 students have been sponsored for PhD programmes under MHRD funded institutions to work on various DRDO projects thereby attracting young research scholars and provide them working exposure to state-of-the-art defence technologies.

(ii) DRDO Young Scientists Laboratories (DYSLs): DRDO has created five DRDO Young Scientists Laboratories (DYSLs) to encourage innovation and incubation, through empowerment of young Scientists/ Engineers below 35 years of age to join DRDO and provide R&D environment in emerging engineering fields and advanced technologies such as Artificial Intelligence, Quantum Technologies, Cognitive Technologies, Asymmetric Technologies and Smart Materials and provide an adequate freedom to young scientists to prove their talent.

(iii) DRDO Paid Internship Programme: DRDO offers an internship programme for students pursuing their graduation/post-graduation in relevant disciplines of engineering and science. This initiative offers unique opportunity to aspiring professionals to work on high-impact defence R&D activities alongside some of the country's brightest minds. This practical experience shall strengthen the technical knowledge of students for future roles in advanced research & engineering within defence technology.

(iv) An extended two years Post Induction Training School (POINTS) Programme for newly recruited scientists of DRDO by offering M.Tech in Defence Technologies has been introduced in collaboration with DIAT, Pune.

(v) In order to attract/support young talent and innovation in Defence R&D, an exclusive Join DRDO campaign video highlighting the opportunities available has been launched on DRDO website and a web based application to capture the research interest of bright minds of the country. DRDO is also conducting outreach programmes to attract young talents by participating in job fairs, exhibition, etc. in various states in collaboration with State Government authorities and encourage them to join DRDO.

(e) DRDO is ensuring intellectual property protection by filing IPR applications on innovations made by DRDO, Academia and Indian Industry by filing various forms of IP like patents, designs, copyrights, trademarks etc. DRDO has empanelled 10 renowned IP attorney firms for filing of all IPR applications of DRDO. DRDO has also taken up licensing of all Indian granted patents on a royalty free basis to the Indian industry under the Make in India program of the Government of India (List of 972 granted patents available on DRDO website). DRDO is also conducting various outreach and awareness programs to promote IPR culture among DRDO, Academia and Indian Industry.

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