

GOVERNMENT OF INDIA  
MINISTRY OF DEFENCE  
DEFENCE RESEARCH & DEVELOPMENT ORGANISATION  
**LOK SABHA**  
**UNSTARRED QUESTION NO. 4997**  
TO BE ANSWERED ON 1<sup>ST</sup> APRIL, 2022

**RESEARCH AND DEVELOPMENT PROJECTS OF DRDO**

4997. SHRIMATI NUSRAT JAHAN RUHI:

Will the Minister of Defence be pleased to state:

- (a) whether the Defence Research and Development Organisation (DRDO) undertakes various Research and Development (R&D) projects;
- (b) if so, the details of projects undertaken during the last three years, laboratory-wise;
- (c) the details of technologies developed by DRDO during the last three years;
- (d) whether the Government provides separate fund to DRDO for R&D purpose; and
- (e) if so, the total fund provided to DRDO in 2022-2023 Budget for R&D purpose only?

A N S W E R

MINISTER OF STATE  
IN THE MINISTRY OF DEFENCE

(SHRI AJAY BHATT)

(a) & (b): Yes, Sir. Defence Research and Development Organization (DRDO) undertakes various Research and Development (R&D) projects through its laboratories working in different technical domains. During 2019-2021, 249 R&D projects were sanctioned by DRDO. Some of the major projects undertaken by various laboratories of DRDO are in the areas of :-

- Missiles
- Radars
- Armoured vehicles
- Anti-Tank ammunition, Rockets, Machine Gun and Fuzes
- Sonars and Torpedo
- Mine Detection System
- Anti-Airfield Weapon
- Fire Fighting & Protection Systems
- Maritime Situational Awareness Systems, Border Surveillance System
- Automatic Transmission
- Small Turbo Fan Engine

...2/-

: 2 :

- New Generation Radios, SATCOM System
- Autonomous Underwater Vehicle
- EW Systems and Chaff Cartridges
- Air Container
- Fuel Cells
- Ordnance Handling Robot
- Seekers
- System on Chip
- Navigation System
- MEMS Switches
- Parachute Systems

(c): Some of the major technologies developed by DRDO during last 3 years include:

- Quantum Random Number Generator and Quantum Key Distribution
- Hypersonic test Demonstration
- ASAT Demonstration
- Single Crystal Blades
- Stealth Technology
- Advanced AI Technologies
- Electromagnetic Launch Technology
- Nanotechnologies
- Complex Concentrated Alloys
- Countermeasure Technologies
- Composite Armour Technologies
- Bioremediation Technology
- Theatre and Terrain Based Food Technologies
- Propulsion Technology
- Cognitive Target Detection
- Multifunctional Moisture Barrier for Fire Protective Suits
- Underwater Communication
- Biomedical Support Systems
- Halon Alternatives and Eco-Friendly Fire Fighting Foam
- Advanced Materials and Materials for Hypersonic
- Advanced Functional Materials
- Advanced Nano Fluid Technology
- Novel Nanomaterials and Hybrid Nanocomposites
- Early Warning System for Landslides
- Low Vulnerable High Performance Propellant
- High Energy Materials
- High Power Millimeter Wave Gyrotron
- Adaptive Composite Structure
- Avalanche Assessment and Avalanche Forecasting
- Advanced Personal Protective System
- Advanced Piezomaterials

...3/-

: 3 :

- Panels for Blast and Ballistic Resistance
- Additive Manufacturing and Polymer Composites
- Network Security Assessment Techniques
- THz Detector

(d): Yes, Sir. Separate fund is being allocated to DRDO as part of Defence Services Estimates. The allocation is being made under Revenue and Capital segments separately. The fund includes expenditure on various heads like Research & Development, Pay & Allowances, Transportation, Stores, Works, Training & Other expenditure under Revenue segment and Mach & Equip and Works under Capital segment. This Budgetary allocations is being utilized for undertaking various R&D projects and execution of Strategic schemes.

(e): The total provisions to D DR&D in BE (Adopted) for the FY 2022-23 is Rs. 21330.20 crore.

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