

**GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH**

**LOK SABHA
UNSTARRED QUESTION NO. 399
(TO BE ANSWERED ON 12.12.2018)**

STRENGTHENING OF ACADEMICS AND INDUSTRY INTERFACE IN SCIENCE

399. SHRI SATAV RAJEEV:

SHRI MOHITE PATIL VIJAYSINH SHANKARRAO:

SHRI DHANANJAY MAHADIK:

SHRIMATI SUPRIYA SULE:

SHRI P.R. SUNDARAM:

DR. J. JAYAVARDHAN:

DR. HEENA VIJAYKUMAR GAVIT:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

- (a) whether any action plan has been formulated by the Government to strengthen the academics and industry interface in science and if so, the details thereof and if not, the reasons therefor;**
- (b) whether several large scale science projects are being undertaken at various national institutes by the Government and private sector;**
- (c) if so, the details thereof;**
- (d) whether the Government is considering to augment investment in this field and if so, the details of estimated investment likely to be made during this year and the coming years; and**
- (e) the steps taken by the Government to strengthen the academics and industry interface in science?**

ANSWER

MINISTER OF SCIENCE AND TECHNOLOGY AND EARTH SCIENCES

(Dr Harsh Vardhan)

- (a) Government has undertaken several programmes / schemes under various departments to strengthen the academics and industry interface in science. The programmes of some of the key government departments/institutions which engage Universities/IITs, R&D institutions and industry are listed below:**

No.	Department /Organisation	Scheme / Programme
1.	Department of Scientific & Industrial Research and Council of Scientific & Industrial Research (autonomous body of DSIR)	• DSIR's Patent Acquisition and Collaborative Research and Technology Development (PACE) programme under which collaborative proposals of industry and academia / research institutions for technology

		<p>development and demonstration are supported.</p> <ul style="list-style-type: none"> • CSIR's New Millennium Indian Technology Leadership Initiative (NMITLI) under which support in the form of grant-in-aid to publicly funded institutions and soft loan to industry is provided to carry out well focused R&D projects in Public-Private-Partnership (PPP) mode. CSIR-NMITLI has been able to network around 110 industry partners and 320 R&D Groups in public institutions since its inception.
2.	Niti Aayog	<p>Atal Innovation Mission (AIM) including Self-Employment and Talent Utilization (SETU) promotes a culture of innovation and entrepreneurship. The Atal Innovation Mission has two core functions, viz. 'Entrepreneurship promotion' through Self-Employment and Talent Utilization, wherein innovators are supported and mentored to become successful entrepreneurs and 'Innovation promotion' wherein innovative ideas are generated through support to Atal Tinkering Labs, Atal Incubation Centers and scaling up of Established Incubators.</p>
3.	Ministry of Human Resource Development	<p>Uchhatar Avishkar Yojana (UAY) promotes industry sponsored, outcome-oriented research projects. The objectives of UAY scheme are to promote innovation in IITs addressing issues of manufacturing industries to spur innovative mindset and to co-ordinate action between academia & industry to strengthen research facilities.</p>
4.	Department of Science & Technology	<ul style="list-style-type: none"> • Drugs & Pharmaceuticals Research Programme - industry institution program for drug development. • SERB has a 'Scheme for Industry Relevant R&D'. This scheme provides

		<p>an opportunity for collaborative research between academic institutions and industry with an aim to bridge the gap between public funded research and industrial R&D.</p> <ul style="list-style-type: none"> • IMPacting Research INnovation and Technology (IMPRINT) is an initiative to address major engineering challenges to enable, empower and embolden the nation for inclusive growth and self-reliance. Department of Science and Technology is partnering with Ministry of Human Resource Development in implementing this program.
5.	Department of Biotechnology	<ul style="list-style-type: none"> • Biotechnology Industry Partnership Programme (BIPP) • Small Business Innovation Research Initiative (SBIRI) • PACE (Promoting Academic Research Conversion to Enterprise) to encourage/support academia to develop technology/product (up to PoC stage) of societal/ national importance and its subsequent validation by an industrial partner.
6.	Indian Space Research Organisation	<p>RESPOND (Sponsored Research and Development Programme in the area of space technology) - RESPOND programme is mutually beneficial to ISRO and Academia, wherein the rich talent of Academia/ faculty is being harnessed to support the Nation's Space programme.</p>
7.	Ministry of Finance	<ul style="list-style-type: none"> • Under section 35(2AA) of IT Act, corporate industries are eligible to claim 175% tax deduction for sponsored scientific research projects in national laboratories, universities and IITs

(b)&(c) Several Large Scale Science Projects are being undertaken at several national institutes and R&D organizations with the support of government departments. These include:

Department of Scientific and Industrial Research (DSIR)

Council of Scientific and Industrial Research (CSIR), autonomous body of DSIR has launched several Mission Mode Projects (MMPs) for concerted and sustained efforts in an identified area by synergizing the best competencies available in various CSIR Laboratories. These include Sickle Cell Anaemia (SCA) Mission, Catalysis for Sustainable Development (CSD) Mission, INPROTICS-Pharma & Agro, Aroma Mission and Phytopharmaceuticals Mission.

Department of Science and Technology

- **India is participating in the construction of Thirty Meter Telescope (TMT) in USA. In this project, India's in-kind contributions include Hardware (Segment Support Assemblies, Actuators, Edge Sensors, Segment Polishing and Segment Coating), Instrumentation (First Light Instruments) and Software (Observatory Software and Telescope Control Systems).**
- **JNCASR, Bengaluru is working in the area of - Application of Surface Enhanced Raman Scattering (SERS) for non-PCR based RNA/DNA detection of HIV, Development of diagnostic probe/agents for Alzheimer's disease (in-cellulo studies), Materials and devices for 'Waste heat to electrical energy' conversion, Diagnostics for Candida species detection in clinical samples, Solution processed solar cell – development, performance monitoring and prototypes, Renewable energy, Organic phosphorescent materials, and Organic porous materials for hydrogen storage and catalytic hydrogen generation and adsorptive based separations (separation of C8 isomers, and C₂H₂ from C₂H₄).**

Defence Research and Development Organisation (DRDO)

- **Programme on Advanced Materials at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore;**
- **Transdisciplinary shock wave research and applications programme at Indian Institute of Science, Bangalore; and**
- **DRDO has also established Centres of Excellence at Indian Statistical Institute (ISI), Kolkata for Cryptology, University of Hyderabad for High Energy Materials, Defence Institute of Advanced Technology (DIAT), Pune for Nanotechnology and Indian Institute of Technology Madras for Research & Innovation to undertake large scale science projects.**

Department of Atomic Energy (DAE)

- **Indus Synchrotrons at Raja Ramanna Centre for Advanced Technology, Indore;**

- **Variable Energy Cyclotron, Super Conducting Cyclotron and Radioactive Ion Beam at Variable Energy Cyclotron Centre, Kolkata;**
- **Low Energy High Intensity Proton Accelerator and Electron Beam Centre at Bhabha Atomic Research Centre, Mumbai;**

(d) Yes, the Government is considering to augment investment to strengthen the academics and industry interface in science during this year and in the coming years. For example, a budget of Rs. 3552.27 crore has been estimated for continuation of Atal Innovation Mission (AIM) which includes Rs. 2088.22 crore till 2019-20 and the balance of Rs.1464.05 crore as committed spillover/ liabilities during 2020-2024; a budget of Rs. 3600 crore has been estimated for launching the National Mission on Interdisciplinary Cyber-Physical Systems during the next five years; and a budget of Rs. 347.73 crore has been allocated for the five CSIR Missions as stated above.

(e) The steps taken by the Government to further strengthen the academics and industry interface in science include:

The Union Cabinet on 7th December, 2018 has approved the launching of National Mission on Interdisciplinary Cyber-Physical Systems to be implemented by the Department of Science and Technology. The NM-ICPS is a comprehensive mission which would address technology development, application development, human resource development, skill enhancement, entrepreneurship and start-up development in CPS and associated technologies. The mission aims at establishment of 15 numbers of Technology Innovation Hubs, six numbers of Application Innovation Hubs and four numbers of Technology Translation Research Parks (TTRP). These hubs and TTRPs will connect to academics, industry, central ministries and state government in developing solutions at reputed academic, R&D and other organisations across the country in a hub and spoke model; and Ministry of Human Resource Development (MHRD) has established 'MHRD's Innovation Cell (MIC)' to systematically foster the culture of Innovation amongst all Higher Education Institutions (HEIs). MIC has envisioned creation of 'Institution's Innovation Council (IICs)' across selected HEIs. Function of Institution's Innovation Council is to promote innovation in the Institution through multitudinous modes leading to an innovation promotion eco-system in the campus, including networking with peers and national entrepreneurship development organizations and organizing Hackathons, idea competition, mini-challenges etc. with the involvement of industries.
