

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH
RAJYA SABHA
UNSTARRED QUESTION No. 3802
(ANSWERED ON 03.04.2025)

INDIGENOUS TECHNOLOGIES DEVELOPED BY THE CSIR LABORATORIES

3802 Shri Parimal Nathwani:

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

- (a) number of indigenous technologies developed by CSIR laboratories over last five years, including details of key sectors where these technologies have been developed;
- (b) steps taken by Government to promote transfer of indigenous technologies from CSIR laboratories to industries in last decade;
- (c) measures adopted by Government to ensure commercialization of indigenous technologies, and industries have benefited from them;
- (d) any specific initiatives taken by Government to encourage collaboration between CSIR and industry players for development and application of these technologies; and
- (e) challenges faced in transferring indigenous technologies to industry and how Government plans to address these issues to ensure greater industrial uptake?

ANSWER

MINISTER OF STATE (INDEPENDENT CHARGE) FOR THE
MINISTRY OF SCIENCE AND TECHNOLOGY AND EARTH SCIENCES

(DR. JITENDRA SINGH)

- (a) 695 indigenous technologies of Technology Readiness Level (TRL) – 6 and above have been developed by CSIR laboratories over the last five years across the following key sectors:
 - Aerospace
 - Advanced Coatings
 - Agrochemicals
 - Aromatic Plants
 - Biotechnology
 - Building Materials, Road and Construction
 - Coal Characterization and Beneficiation
 - Corrosion and Corrosion protection
 - Energy Storage and Functional Materials
 - Environment and Ecology
 - Food Processing
 - Generic Drugs
 - Glass and Ceramics
 - Healthcare
 - Industrial Catalysts
 - Leather Technology

- Mining, Minerals and Metals
 - Petroleum and Petrochemicals
 - Polymers
 - Strategic Sector
 - Structural Engineering
 - Water and Ocean Sciences
 - Valorization of industrial wastes
- (b) Over the past decade, CSIR has implemented several initiatives to facilitate the transfer of indigenous technologies developed by its constituent laboratories/ institutes to industries. Key initiatives taken are at **Annexure – I**.
- (c)&(d) Measures have been taken to ensure the commercialization of indigenous technologies as well as to encourage collaboration between CSIR and industry players. Key measures taken are at **Annexure – II**.
- (e) Several challenges are being faced in transferring indigenous technologies to industry, including limited industry awareness about available technologies, reluctance to adopt new innovations due to high initial investment, regulatory hurdles, and gaps in scalability and market readiness. Additionally, industries often require customization of technologies to meet specific needs, which may delay commercialization.
- To address these issues, CSIR has introduced several initiatives to facilitate smoother technology transfer, including dedicated funding support for Fast Track Translation/ Fast Track Commercialization Projects to enhance the TRL of the technology to fast track the commercialization, greater emphasis for setting up of the pilot-plant at CSIR labs, ease of patent licensing, skill development programs, incubation programs, alignment with Atmanirbhar Bharat and Make in India Missions to promote commercialization of indigenous technologies, discounted technology transfer fee/ licensing fee for Startups/ MSMEs, more emphasis towards dissemination of the technologies through media (social, print, electronics and webinars) and organizations of specific events such as ‘One Week One Lab’ (OWOL) Campaign and ‘One Week One Theme’ (OWOT) Campaign to ensure greater industrial uptake including among others.

Key initiatives undertaken at CSIR to facilitate the transfer of indigenous technologies developed by its constituent laboratories/ institutes to industries are as under:

- ***Integration with National Initiatives:*** Indigenous technologies developed from CSIR have been aligned with national programs like *Make in India*, *Startup India*, and *Atmanirbhar Bharat*, encouraging its constituent laboratories/ institutes to transfer indigenous technologies to industries to adopt homegrown solutions for global competitiveness.
- ***Business Development Group/ Cell:*** A dedicated Business Development Group/ Cell is working in most of the CSIR laboratories/ institutes to facilitate licensing agreements with industries. This team employs a multifaceted approach to market technologies, ensuring maximum outreach and engagement with potential clients and stakeholders.
- ***CSIR India Technology Portal:*** CSIR India Technology Portal for easier access to technologies has been launched. CSIR technologies are showcased and highlighted on this central portal to attract potential collaborators, investors, and industry partners for seamless technology transfer. This platform serves as a gateway for businesses, researchers, and innovators to explore licensing opportunities and commercial partnerships.
- ***Handholding Support for Startups:*** CSIR has been providing comprehensive assistance to startups, guiding them from the preparation of a Detailed Project Report (DPR) to the successful implementation of indigenous technologies. Beyond these engagements, CSIR has supported startups and MSMEs by providing access to lab facilities, mentorship, and technology licensing.
- ***Special Concessions & Incentives:*** In order to help Micro and Small Industries, including cottage/ tiny industries, a special concession in project costs has been offered. This initiative serves as a motivational measure to drive innovation and adoption of homegrown technologies.
- ***Setting up of the Incubation centers:*** Incubation centers such as Atal Incubation Centres, Venture centers and Innovation Complex, Mumbai have been established to increase collaboration with the industries.
- ***Skill Development & Training Programs:*** CSIR laboratories/institutes have been conducting several skill development programs, workshops, and capacity-building sessions to train industry professionals and entrepreneurs on the effective use of indigenous technologies under “CSIR’s Integrated Skill Initiative”.
- ***Collaboration with Industries:*** CSIR has been collaborating with the industries to promote the transfer of indigenous technologies from its labs. Extensive activities/events such as One Week One Lab, One Week One Theme, etc. have also been organized to increase awareness about CSIR technologies to the industries. As a part of these efforts, to facilitate technology outreach towards MSMEs, CSIR has entered into a collaborative arrangement with *Laghu Udyog Bharati (LUB)*. The deployment of CSIR technologies is envisaged to bring efficiency in the operations of LUB Units/MSMEs at economical costs, besides bringing awareness about the societal contribution of CSIR under the AtmaNirbhar Bharat initiative of Govt of India. Under this collaboration, a substantial number of technology transfers have been accomplished, covering more than 50 MSMEs.
- ***Fast Track Translation (FTT) and Fast Track Commercialization (FTC) projects:*** CSIR has put in place a mechanism to support Fast Track Translation (FTT) and Fast Track Commercialization (FTC) projects in order to ensure fast track development of the technologies. The aim is to reduce time from idea to market, stimulate the participation of cross-section of scientists and technical personnel towards a defined goal. The endeavour is

to deliver new technologies and products in a short span of 18-24 months. The Fast Track Commercialization (FTC) projects are positioned to create new business opportunities or expand existing businesses in a time frame of 12-18 months.

- ***Collaboration with National Research Development Corporation (NRDC):*** NRDC plays a pivotal role in fostering innovation and technological advancements. NRDC serves as a crucial bridge between national R&D institutions, universities, and industries. CSIR has entered into an umbrella agreement with NRDC to actively promote cutting-edge technologies and facilitate their seamless transfer to industries for commercial applications.

Measures taken to ensure the commercialization of the indigenous technologies as well as to encourage collaboration between CSIR and Industries

Technologies and products developed by CSIR laboratories are given the utmost popularity in order to reach to the common man. Various platforms, accessible to the general public, are used to popularise the technologies & products of CSIR at the laboratory level as well as at Headquarters level for Nation-wide reach of the technologies. The details are as follow:

- i. **Social media** – CSIR and its laboratories maintain their social networking pages on various popular social networking sites such as **Twitter, Facebook, LinkedIn and YouTube** for instant showcase of various S&T activities and achievements of CSIR and also for **LIVE coverage** of different scientific related activities organised by CSIR. Any new development or successful accomplishment of technologies/ products are highlighted on these social media platforms for wider access and information of the general public.

Links to the social media channels of CSIR are:

https://twitter.com/CSIR_IND

<https://www.facebook.com/INDIA.CSIR/>

<https://www.youtube.com/CSIRINDIA1942>

- ii. **Print Media** – CSIR uses various print media methods for spread of information on the development of its technologies and products. Some of the well-known print media tools are

- Publishing of the CSIR Annual Reports; CSIR laboratories publishes their own Annual Reports.
- CSIR's activities/new launches/ announcements/ technologies etc get regularly printed in local and nation Newspapers in English, Hindi and other regional languages. Online version of a special NEWS Bulletin named as “**CSIR in Media: Weekly News Bulletin**” is compiled and published taking clips available in print media as received from various CSIR labs and other sources like Google alert, Twitter, Facebook, etc. The published NEWS of CSIR are compiled on weekly basis and uploaded on the CSIR website.
- Year-end reports on the achievements & technological development of CSIR and press release for CSIR's activities/new launches/ announcements/ technologies, etc., are submitted to Press Information Bureau to be made available to the general public.
- CSIR also published a COVID Compendium titled **CSIR Technologies for COVID-19 Mitigation**. The compendium includes details of about 100 Covid-19 technologies categorised under diagnostics, drugs and vaccines, hospital assistive devices and PPEs, supply chain and other Covid-19 technologies. Salient technical features of each of the technologies, uses, the laboratory, and industry partner details are given.

All information is made available on the CSIR website for easy access and knowledge of the general public. Some links are given below for reference:

<https://www.csir.res.in/about-us/annual-report>

<https://www.csir.res.in/news-bulletin>

<https://niscpr.res.in/periodicals/csirnews>

- iii. **Electronic Media** – CSIR makes jingles that get telecast on various Radio channels and other public platforms (such as at Expos).
- iv. **Webinar series with LIVE Q&A sessions** – From time to time, based on the need of the hour, CSIR organises various webinar series to showcase the path-breaking products, technologies & achievements of CSIR to the public through social media platforms.

CSIR Success Story webinar series: During the celebrations of *Azadi Ka Amrit Mahotsav* and 80 Years of CSIR, a *Success Story webinar series* was launched by CSIR, focusing on key products & technologies developed by CSIR in its 80 years of journey. The webinar series invited participation of eminent personalities including Hon'ble Minister S&T, Dr Jitendra Singh; DG, CSIR; and Former DGs of CSIR, Padma Shri Vaidya Rajesh Kotecha; Professors from prestigious institutes, industry partners, stakeholders, beneficiaries and the eminent CSIR Directors, Former Directors, Heads and Scientists. Each webinar session includes Live Interaction with potential stakeholders including students and beneficiaries, Q&A sessions addressing queries from LIVE audience, and a Blogs on each success story uploaded on CSIR website.

https://www.youtube.com/watch?v=h5I-zWgOJIE&list=PLxOObh_wALetBmNpZMlIBpZSIMw1GDle2

Other Technology showcase and Lab specific movies: CSIR, India YouTube webpage also encompass movies & seminars on various popular Missions of CSIR such as Aroma Mission and also on various laboratory specific technologies of CSIR, for knowledge and awareness of general public.

<https://www.youtube.com/@CSIRINDIA1942/playlists>

- v. **‘One Week One Lab’ (OWOL) Campaign:** The ‘One Week One Lab’ campaign of CSIR is launched to focus on the utmost need of the present day to establish a resourceful connect of stakeholders (scientists/ entrepreneurs/ students/ industries/ start-ups/ society) for the advancement of the technologies and the progress of the society. The objective of the campaign was to showcase the diverse legacies, exclusive innovations and technological breakthroughs of the network of CSIR labs, working in diversified domains of Science & Technology. During the campaign, each of the 37 laboratories of CSIR showcased their technological breakthroughs every successive week. During the campaign each CSIR lab organized week long events including industry and start-ups meet, students connect, society connect, display of technologies, etc.
- vi. **‘One Week One Theme’ (OWOT) Campaign:** After the success of the CSIR’s ‘One Week One Lab’ (OWOL) campaign, CSIR has launched One Week One Theme (OWOT) campaign to showcase recent success stories of CSIR in different streams of science and technology with an aim to make innovation inclusive for all and to **create awareness among citizens** about the progress and development in Labs, to benefit them giving them new avenues and opportunities for employment, empowering stakeholders such as **MSMEs, Startups, SHGs, scientists**, researchers by integration and collaboration with Industry. During the campaign, CSIR showcased success stories in different streams of science and technology theme-wise.
- vii. **Expos, Seminars and Exhibitions** – CSIR participates in various Expos and Exhibitions ongoing throughout the year at National & International levels across the Nation for dissemination & awareness of Scientific achievements/ technologies & product development of CSIR. Scientists and technologies from CSIR interact with various stakeholders including the representatives of the State Government Departments visiting the exhibitions & expos

including the general public/ students/ communities/ Start-ups etc to generate awareness and interest. CSIR also participated in the India International Science Festival (IISF) and showcased its technologies & products for awareness and popularisation of masses.

viii. Technology Websites of CSIR – CSIR has a Technology portal which lists all its TRL 6+ technologies, many of which have already been implemented/ commercialized. The portal also lists the success stories as well as technologies for social Interventions for improving livelihood. Some Technology Compendium and links to CSIR's Technology showcase are provided below for ready reference.

- [CSIR Technology Showcase](#)
- [Compendium of CSIR Technologies](#)
