

Department of Science & Technology
Monthly Report
June, 2019

I. Important policy decisions taken and major achievements during the month:

1. DST attended Mission Innovation Secretariat Workshop on “Carbon Capture Utilisation and Storage (CCUS)” on 19th-20th June 2019 in Trondhiem (Norway). This workshop was about strengthening collaboration between industry sectors and research institutions, and public and private sector, by identifying RD&I gaps of common interest in technologies.
2. Partnership opportunities were also explored with Asian Development Bank during Asia Clean Energy Forum 2019.
3. DST attended a meeting organised by Technical University of Denmark DTU, Copenhagen, Denmark on 17th June 2019 to leverage the experience of DTU in diverse MI challenges with special focus on Smart Grids, Wastewater technologies and industrial interface of DTU in the perspective of India and Denmark collaborative prospects.
4. An Interaction Meeting was held on 1st June 2019 at Vancouver, in the presence of Italy, China and Canada collaborators to assess the recent activities and adopt future strategies to achieve the key deliverable in proposed time frame for the project proposal D-SIDES, a smart grid MI project led by IIT Roorkee.
5. A Meeting was held with officials from University of British Columbia on 19th June 2019 at Tata Power Delhi Distribution Limited, New Delhi to discuss about the future collaboration and roadmaps in the area of Smart Grids.
6. DST participated in Project Management Committee Meeting and 10th meeting of the Over Arching Committee (OAC) to review the Development of Advanced Ultra Super Critical (AUSC) ongoing projects supported by DST.
7. A meeting was held on 25th June 2019 at BHEL Hyderabad to review the status of 0.25 TPD methanol plant.

8. A review meeting was held on 27th & 28th June 2019 at SCCL Coal Mine, Kothagudum, Telangana to discuss the strategy plan and road map for the ongoing project on Microbial Recovery of Biogenic Methane from Coal Washery Rejects with CO₂ Sequestration Using Novel Hybrid Geo Photobioreactor and Reclamation of the Site.
9. A Demand driven Mission mode project - "Technology implementation for water management system in Gurugram" submitted by Transdisciplinary Research Cluster on Sustainability Studies (TRCSS), Jawaharlal Nehru University, New Delhi in collaboration with Centre for Technology & Development (CTD), New Delhi and SGSD (Society for Geo-Informatics and Sustainable Development), Haryana - has been supported.
10. Two consortia were approved for Urban Water System Research under the scope of WTI Urban Water Systems (UWS) in meeting held on 7th June 2019 at IIT Delhi, New Delhi.
11. 3rd Project Monitoring Committee for the review of Research Initiative for Real time River Water and Air Quality Monitoring (WAQM) program was held on 26th June 2019 at IIT Delhi, New Delhi. Four consortia in the area of river water quality and Air quality monitoring were reviewed.
12. DST attended TEQIP short term course on Clean Energy Technologies and made presentations on Clean Energy R&D scenarios during 10th-14th June 2019 at IIT Guwahati. The objective of the course was to enable the learner to understand the clean energy technologies in broadest terms which includes different aspects of clean energy, their importance, advantages compared to conventional energy sources, environmental impacts, economic feasibility, clean energy sources and their socio-economic issues and to analyze different challenges in the use of clean energy technologies, effective methods to overcome the challenges and also to focus on different schemes and policies adopted by Government of India.
13. The design and development of in-kind items for Facility for Antiproton and Ion Research (FAIR) and Thirty Meter Telescope (TMT) projects is in full swing. For FAIR project, 67 Power Converters developed in India are ready to be shipped to FAIR, Germany an in-kind item from India. For

TMT project, 15 Prototype Actuators sent to Project Office, TMT at USA were undergoing life tests at Jet Propulsion Laboratory, USA. Vigyan Samagam, a multi-venue mega science exhibition, jointly organized by Department of Atomic Energy and Department of Science & Technology continued at Nehru Science Centre, Mumbai during this month also.

14. Outcomes of Core Support Groups (CSGs) Supported under TARA: Field assessment of Technology Informatics Design Endeavour (TIDE), Bangalore, was conducted to evaluate the performance of ongoing Core Support project in the area of developing energy efficient cooking products & processes on during 17-18 June 2019. The following outcomes were observed:

- TIDE developed Agni Sakhi (version 2 & 3), Agni Mithra (version 2), Bakery oven, Large onsite stove for sweet makers, accessories and components for PYRO stoves. This deployment will reduce firewood consumption by 70% (compared with traditional).
- Mid-day meal stoves developed specifically for Khichdi, Dalia, Rice, Sambhar and proposed for Jowar Roti.
- Trained-54 women for Sarala stove assembly, 6 women and 4 men in areca leaf plate making, 35 women in value added millet products.
- Created 22 women enterprise for leaf plate making and 15 Millet based enterprise in rural settings.

Above technology products developed and services delivered through Core support project are also contributing to SDG No. 3 (Good health), SDG No. 5 (Gender equality), SDG No. 7 (Affordable & Clean energy), SDG No. 13 (Climate Action).

15. Field assessment of Society for Energy, Environment & Development (SEED), Hyderabad was conducted to evaluate the performance of solar powered micro food processing system on 11-12 June, 2019 for ongoing Core support project. The following outcomes were observed:

- Improved design of solar cabinet dryer models with better control systems, PUF insulation, Air Filters and Load Cells.

- Standardized Business models by incorporating new features to Solar Cabinet Dryers – SDM-200, SDM-400 & SDM-500 models in addition to SDM-25 & SDM-50 models for different regional entrepreneurs.
- Developed nutritional supplement for pregnant, nursing mothers, infants and geriatric population.
- Developed dehydration processes for underutilized regional fruits (8), vegetables and forest produce for value addition and preservation (28).
- Many SHGs, NGOs, Women entrepreneurs, Tribal, Farmers and farmer associations, organic farmers and start-ups are involved in absorbing this technology of solar cabinet dryer facility as evidently shown in case of Kerala involving an SHG based in Trivandrum.

Above technology interventions and social impact clearly indicates its contribution to SDG No. 3 (Good health), SDG No. 5 (Gender equality), SDG No. 7 (Affordable & Clean energy), SDG No. 13 (Climate Action).

16. Technology Intervention for Addressing Societal Needs (TIASN): First meeting of the unified Expert Committee of SYST and TIASN programmes was held on 12-13 June 2019 at JNU. 30 New proposals were evaluated for funding during the meeting.

17. **Tribal Sub Plan (TSP):** The performance of TSP under DST was reviewed by the Ministry of Tribal Affairs on June 13, 2019 and following achievements were reported:

a) Autonomous Institutions (AI's) & Professional Bodies

Projects being supported in areas of

- a. mobile tele-medicine,
- b. upliftment of ST students in schools/colleges by providing fellowships
- c. Scholastic upliftment (interaction of AI faculty with ST students/teachers, visit to AIs, laboratories etc.)
- d. Livelihood activities

b) S&T Institutional & Human Capacity Building

INSPIRE AWARD

3840 young students were supported during the FY 2018-2019 to study science and pursue research career

c) Science & Engineering Research Board (SERB)

Rs.10 crores spent on ongoing Scheme named Empowerment and Equity Opportunities for Excellence in Science (EMEQ) provide research support to scientists belonging to the SC and ST population for undertaking research in new emerging and frontier areas of science and engineering.

d) Innovation, Technology Development & Deployment

Grant-in-aid projects through Knowledge Institutions, R&D Labs, S&T based Voluntary Organizations focusing on societal requirements. Projects were supported for

- Livelihood Activities and Income Generation
 - S&T based models for creating infrastructure
 - Training Programmes in advanced technologies like Data Analytics AI, IoT etc.
 - Skill Development
 - Database Management Systems
18. S&T for Women: Rural Women Technology in Patan Block of District in Maharashtra The project trained 1889 women in selected 6 technologies like improved agriculture practices, food processing, animal husbandry and dairy technology, fruit processing technology, Sustainable harvesting, primary processing and marketing of medicinal plants & its nursery.
19. 3rd Meeting of Technical Advisory Committee on STEMM India initiative was held during 3-4 June, 2019 at Nainital. New Project Proposals were considered by the Committee.

20. 4th Meeting of Programme Advisory and Monitoring Committee (PAMC) for S&T Communication programmes on “Science behind Miracles, Science Communication through Folk Media, Low-Cost Teaching Aids etc., and National Science Day & National Mathematics Day through State S&T Councils” was held at Panchkula, Haryana on 13-14 June, 2019. New project proposals were considered by the Committee.
21. Initiated the work related to preparation of SFC for the Technology Fusion and Application Research (TFAR) Programme. Concept Paper on National Mission on Quantum Technology and Application was prepared. DPR Advisory Committee (DAC) and DPR Drafting Committee (DDC) was constituted.
22. As an outcome of the interactive meeting for the DST sponsored School Awareness Programme under Schedule Tribe (ST) Category of ICPS Programme, all the PIs were advised to submit plan of actions, schedule and model of implementation of the said awareness programme in the assigned aspirational districts at the earliest to DST.
23. Ongoing activities updation on daily basis for all the technical divisions, admin, and finance department has been developed in e-PMU. Some User specific issues related to schemes has been resolved in e-PMU and implemented on the server. Provision for entering Foreign PI details, better searching functionality for schemes and formats page and many more pages has been given in e-PMU. In e-Office, eFile version 5.5_11(with applet free signing) has been deployed.
24. Sensitization Seminar on GLP for Students of Amity University, Manesar (Haryana) was organized on June 10&11, 2019.
25. 63rd meeting of the Scientific Council (SC) and 34th meeting of the Industrial Research Committee (IRC) of the Indo-French Centre for Promotion of Advanced Research was held in Lille (France) during June 2 – 7, 2019. The meeting was attended by the members of SC & IRC on the two sides.

The SC considered 41 proposals from thematic areas and recommended 7 proposals on the themes of (i) Host-Microbe-Interactions in Health and

Agriculture (ii) Biological Questions using or Developing Mathematical, Computational or Physical Approaches (iii) Multifunctional Materials and the Underlying Science (iv) Exotic States of Materials and Quantum Criticality and (v) Biological Chemistry (chemistry for unravelling the biological process). Out of 36 proposals from general areas, the SC recommended one proposal in the area of Life and Health Sciences. In addition, Council recommended holding of Seminar on “Optimization, Variational Analysis and Applications” at Banaras Hindu University.

The Industrial Research Committee reviewed progress of 8 on-going projects and completion of 2 projects. The IRC reviewed 6 new proposals and recommended one proposal for funding by the IFCPAR.

26. DST and Lindau Foundation Germany selected 21 Indian students under three categories viz., Masters, Doctoral and post-doctoral in the physics subjects, for their participation in 69th Nobel Laureates meeting during June 30 - July 5, 2019 in Lindau and DST-DFG visits to German research institutions during 6-12 July 2019.
27. The India Science and Research Fellowship (ISRF) Programme: A total of 53 applications received from Afghanistan, Bangladesh, Bhutan, Maldives, Myanmar, Nepal, Sri Lanka and Thailand were reviewed by a panel of experts under the India Science and Research Fellowship (ISRF) Programme. Based on research proposal, experience, academic merit and publication record, 43 candidates from 8 countries were awarded this fellowship to pursue research in frontier/advanced areas of Science and Technology including Engineering, Medicine and Agriculture for a period of 3-6 months.
28. A call for proposal is announced under the India Ethiopia Innovation & Technology Commercialization Programme (IEITCP) in the following thematic areas: Agriculture & Animal Husbandry; Food Processing; Health; Water & Sanitation; Renewable Energy; ICT & IT; Trade & Industry; Mines & Minerals; Petroleum & Natural Gas; Environment & Forestry and Infrastructure. The Programme will identify and utilize validated Indian technologies/innovations culled through a unique and rigorous evaluation process to create sustainable joint projects/ventures in Ethiopia.

29. Subject Expert Committee Meeting to review the progress of ongoing projects sanctioned in 'Engineering and Technology Development' under WOS-B Programme was conducted on 4 June, 2019 at IIT Delhi, New Delhi. Five technologies are under developmental stage under WOS-B and mosquito repellent has also developed from orange peel under one WOS-B project.
30. Subject Expert Committee Meeting on Health, Food and Nutrition (HFN) under WOS-B Programme was conducted on 11-14 June, 2019 at NIPER, Hyderabad.
31. Subject Expert Committee Meeting on Chemical Sciences under WOS-A Programme was conducted on 13-15 June, 2019 at IACS, Kolkata.
32. Task Force Meeting of Cognitive Science Research Initiative (CSRI) was conducted on 17-19 June, 2019 at INSA, New Delhi.
33. Subject Expert Committee Meeting on Physical and Mathematical Sciences under WOS-A Programme was conducted on 27-29 June, 2019 at C-MET, Pune.
34. Scholarship For Higher Education (SHE):
SHE scholarship was released to 3485 INSPIRE - SHE scholars for pursuing B.Sc./M.Sc. Degree course in basic and natural sciences
 - 65 INSPIRE Scholars/visitor's queries were responded.
35. INSPIRE Fellowship: 1186 INSPIRE Fellow's Fellowship was released for pursuing their doctoral degree program. Five INSPIRE Fellowship Review meetings were organized in which 689 INSPIRE Fellows progress was monitored by the respective subject experts.
36. INSPIRE Faculty Fellowship: 214 INSPIRE Faculty Fellow's Fellowship was released for pursuing their post doctoral program.
37. "Fund for Improvement of S & T Infrastructure in Universities and Higher Educational Institutions (FIST)" Screening Meeting in Life Sciences Area was held on 14 June 2019 at Palampur. Around 200 proposals were evaluated by the Subject Expert Committee in this meeting and 50 proposals were finally screened in for presentation.

38. Sophisticated Analytical Instrument Facilities (SAIF): Discussion meeting was held at IISER, Pune in June 2019 to deliberate and finalize facilities at Sophisticated Analytical and Technical Help Institutes (SATHI) Centres shortlisted by Department of Science & Technology for cutting edge research in the country.
39. Promotion of University Research for Scientific Excellence (PURSE)-Project Implementation Group Meetings were held at Jamia Milia Islamia and Jamia Hamdrad University, New Delhi supported under PURSE. The meetings were attended by Project Implementation Group Members at the University level and DST representatives. Various implementation issues were discussed and mid course corrections were suggested.
40. 4th Meeting of the NSTMIS Expert Committee on Bibliometrics (ECB) for Evaluation of Science & Technology was held during 3-4 June, 2019.
41. Group Project Review meeting on **Impact of government policies on gender mainstreaming in S&T** was held on 20th June, 2019 at Panjab University, Chandigarh.
42. Survey of India has been adjudged as Rank 1 among all Central Implementing Agencies in role based performance Ranking by World Bank for its performance in National Hydrology Project (NHP) during Third Implementation Support Mission for NHP.
43. Atlas of India in Bengali Braille Script has been published.
44. Imparted training to the Teachers and Trainers of visually impaired.
45. State Atlas of Goa published.
46. Processing of data sets for uploading in Server is going on for the following projects:
 - Planning Map Series: 10 Districts.
 - Data modelling and data structure are in progress for maps & atlases.
47. Loan Agreement signed on 24th June, 2019, with M/s iMinBit TechIndia Pvt. Ltd., Haryana for loan assistance of Rs. 148.00 lakh for implementation of project. "Manufacturing & Commercialization of Water Saving RO Based Purification Technology".

48. On the request of CHORD Division of DST, TIFAC prepared first draft policy document on Scientific Social Responsibility.
49. For training under 11th Batch of KIRAN IPR, interviews conducted at Chennai, Delhi, Kharagpur and Mumbai. Two days (June 11-12, 2019) advanced training programme on IPR for state of Maharashtra conducted in association with RG State Science & Technology Commission, Mumbai. One patent granted to IIT Delhi which was facilitated by PFC.
50. Two studies on GAINS-City Model for Indian Cities and Agro-biodiversity Conservation and Ecosystem Development have been completed under India-IIASA Programme.
51. Under MSME Program: five Technology Gap Analysis Studies approved for commissioning in the clusters of (i) Apparel Manufacturing Cluster-Kolkata (ii) Chanapatana Toys Clusters–Mysore (iii) Fisheries and Food Processing Cluster- Manipur and (iv) Arecanut/Sal Leaf plate Manufacturing Cluste-Bankura and (v) Katkhal Sital Pati Cluster, Assam.
52. With the aim to showcase the finest authors whose books have been able to create curiosity amongst readers, a 24 minute program ‘Ask the Author’ has been started on Science Channel.
53. Vigyan Prasar started “Project Bangla” to enhance Science outreach amongst Bengali speaking population in which books, newsletters and workshops have been planned.
54. Technical details with Ministry of Culture on digital exhibits on Mahatma Gandhi across India have been finalized.
55. 37 video programs and 48 Promo Productions were made under DD Science Project. These programs scored very high TRP.
56. The first detailed paper on Galactic Globular Cluster NGC 4147 based on the photometric observations acquired with the 4k x 4k Imager on 3.6m DOT is accepted for publication in Astronomical Journal. Imaging and spectroscopic tests with ADFOSC on DOT were carried out. ASTRAD project is completed by ECIL and handed over with all 12 clusters presently working. The components of 4m ILMT were made ready for commissioning expected in October 2019.

Publications: 5 published, 5 accepted, 5 submitted in international journals.

57. Professor Darshan Ranganathan Memorial Lecture (2019) on Modulation of neuronal function by intracellular calcium signaling by Professor Gaiti Hasan, FNA on 14 June, 2019 at Indian Institute of Science, Bengaluru. The lectureship carries an honorarium of Rs.25,000/- and a citation.
58. Srinivasa Ramanujan Medal (2019) Lecture on Trace Formulae in Operator Theory – Story of Two Projections by Professor KB Sinha, FNA on 27 June, 2019 at Indian Institute of Science, Bengaluru. The award carries a Copper Medal (Silver plated) and a citation.
59. Prof. A. Jayaraman, Director, National Atmospheric Research Laboratory, Deptt. of Space, Govt. of India, Gadanki, AP, nominated as National Representative of COSPAR (Committee on Space Research)
60. During the month, ten Indian scientists visited abroad under INSA Bilateral Exchange Programme.
61. 5 Indian scientists supported by the Academy for attending non-ISC (International Science Council) sponsored international conferences abroad.
62. National Education Policy Discussion meeting was held at INSA premises on 22 June 2019.
63. Special publication on Fellowships and Funding Opportunities for School Students: Way Forward (Author: Muthamilarasan Mehanathan) has been reprinted.
64. Proceedings of the Indian National Science Academy – Volume 85, No. 2 (June issue), has been published.
