Office of the Principal Scientific Adviser to the Government of India

SCIENCE & TECHNOLOGY CLUSTER

BeST CLUSTER

Bengaluru Science & Technology Cluster

NEWS*LETTER*

JULY 2023

Bengaluru Science & Technology Cluster

1st PRMC Review Meeting

10th July 2023

The Bengaluru Science and Technology (BeST) Cluster, an initiative by the Office of the Principal Scientific Adviser to the Government of India, is one of the six S&T Clusters across the country, and fosters collaborations across sectors, serving as an inclusive science and technology knowledge platform aligned with local, regional, and national goals for an AatmaNirbhar Bharat.

The 7th Project Monitoring Review Committee meeting, and the first for the Bengaluru Science and Technology Cluster, was held at the hallowed Council Chamber of the Indian Institute of Science.

Present at the PRMC meeting were esteemed individuals, namely Dr. (Mrs.) Parvinder Maini, the Honorable Scientific Secretary at the Office of the PSA, Dr. Swati Basu, who served as the Chairperson of PRMC, Dr. Dinakar Kanjilal, Dr. Kalpana Balakrishnan, Prof. Anil Gupta, Dr. Anand Nayak, Prof. Sampath

S, Prof. V Ramgopal Rao and Dr. Arun Bhardwaj,Shri Vivek Kumar, Shri Yasir Khan from O/o the PSA, were also present.
Prof. Ambarish and Dr. Taslimarif Saiyed, Co-Principal Investigators of the Cluster, shared the cluster's efforts in advancing the outcomes of the respective themes.

The Theme leads - Prof. Uma, Prof. Farah, Prof. Ananthsuresh, Prof. Bobji, Prof. Abdul Pinjari, Prof. Debasis, Prof. Santosh and Prof. Apoorva - presented updates on their respective themes (One Health, Digital foot Kiosk, Precision agriculture, Monsoon weather and Climate change, Urban Mobility, Jet engines, Quantum Technoloies).

The meeting saw active participation from the various partners in industry, academia/research, start-ups, and other collaborators in each theme. The Committee offered valuable insights and feedback to enhance the effectiveness of science and technology (S&T) initiatives in addressing local challenges, aligning with National Missions, and fostering strong industry-academia collaboration. The Bengaluru Science and Technology Cluster (BeST) presented notable progress across several themes. The #Precision/protected agriculture theme highlighted noteworthy progress in developing technologies to enhance agricultural productivity and promoting sustainable farming practices, while the #Digitalhealth theme highlighted technical advancements to improve access, quality, and affordability in treating diabetic neuropathy.

The One Health domain was recognized for its essential role in addressing interconnected issues related to human, animal, and environmental health through scientific data collection methods to mitigate zoonotic diseases and preserve public health.

The meeting further explored consortium-based approaches, delving into themes such as Weather, Monsoon, and Climate Change, while acknowledging the immense potential of transformative sectors like Quantum, Robotics, and Jet Engine Technology. The BQTI (Bengaluru Quantum Technology Initiative) was highlighted as a significant step towards preparing for the National Quantum Mission.

Additionally, discussions centered around policy requirements for themes like Urban Mobility, emphasizing the importance of collaboration with local authorities and government bodies to drive progress in this area.

The PRMC review meeting concluded with a vision to harness the scientific, academic, industrial, and start-up ecosystem that enriches Bengaluru through the activities of the Bengaluru Science and Technology Cluster.

BeST Cluster hosts

The G20-Chief Science Advisers Roundtable (G20-CSAR)
A high profile side event on 21st July 2023 in Indian Institute of Science (IISc)

The roundtable discussion focused on 'An institutional mechanism for inclusive, continuous and action-oriented global S&T policy dialogue' with over 20 participants from various sectors - academics, institutions of public policy, think tanks, industry, startups and consulates.

"An institutional mechanism for inclusive, continuous, and action-oriented global Science & Technology policy dialogue"

The theme of India's G20 Presidency - "Vasudhaiva Kutumbakam" or "One Earth · One Family · One Future" - is drawn from the ancient Sanskrit text of the Maha Upanishad. Essentially, the theme affirms the value of all life – human, animal, plant, and microorganisms – and their interconnectedness on the planet Earth and in the wider universe. The theme also spotlights LiFE (Lifestyle for Environment), with its associated, environmentally sustainable and responsible choices, both at the level of individual lifestyles as well as national development, leading to globally transformative actions resulting in a cleaner, greener and bluer future.

For India, the G20 Presidency also marks the beginning of "Amritkaal", the 25-year period beginning from the 75th anniversary of its independence on 15 August 2022, leading up to the centenary of its independence, towards a

futuristic, prosperous, inclusive, and developed society, distinguished by a human-centric approach at its core.

The G20-CSAR is a new initiative launched during India's ongoing Presidency of the G20. G20-CSAR will bring together the Chief Scientific advisors of the G20 Heads of state/Government with the objective of creating an effective institutional arrangement/platform to discuss global Science & Technology (S&T) policy issues, which can subsequently evolve into an effective and coherent global science advice mechanism. Furthermore, G20-CASR aims to come up with solutions to some of the issues faced by the global S&T ecosystem.

The priority areas of CSAR during India's G20 Presidency include "One Health" and facilitating shared scientific infrastructure for global good and collaboration in emerging and futuristic technologies & evolving standards. The first meeting of G20 CSAR was at Ramnagar, located in the Kumaon region of the state of Uttarakhand from 28-30th March 2023.
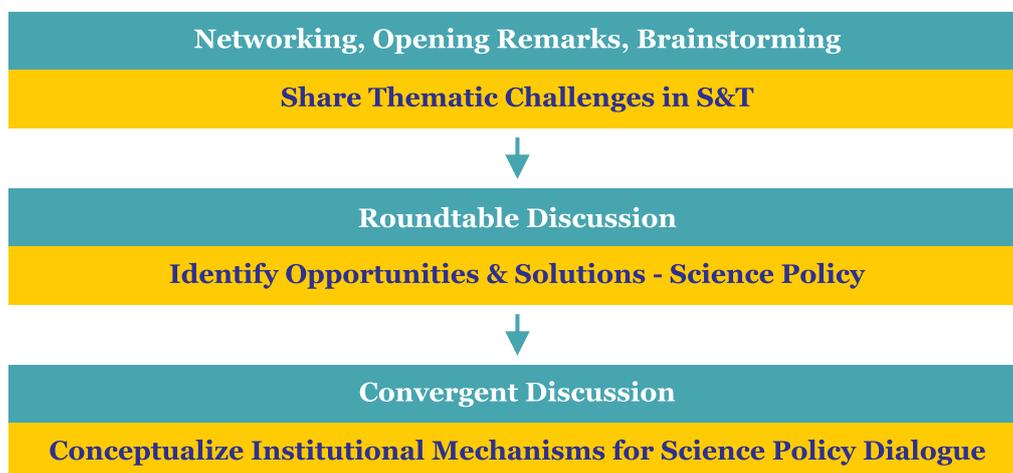
The G20- CSAR side event on 'An institutional mechanism for inclusive, continuous, and action-oriented global Science & Technology policy dialogue' was hosted by the BeST cluster to

- Gather information, perspectives, and practical examples on existing mechanisms for science policy dialogue

- Explore solutions to existing challenges in mechanisms for science policy dialogue. Based on their background and experience, participants were encouraged to leverage the roundtable platform as an exploratory mechanism for the ideal landscape that they envision would promote global science advice mechanisms. The thematic topics of **urban mobility** and **quantum technology** were used as examples of S&T topics for which global science policy dialogue mechanisms need to be strengthened.

SCIENCE FOR POLICY ⟷ **POLICY FOR SCIENCE**
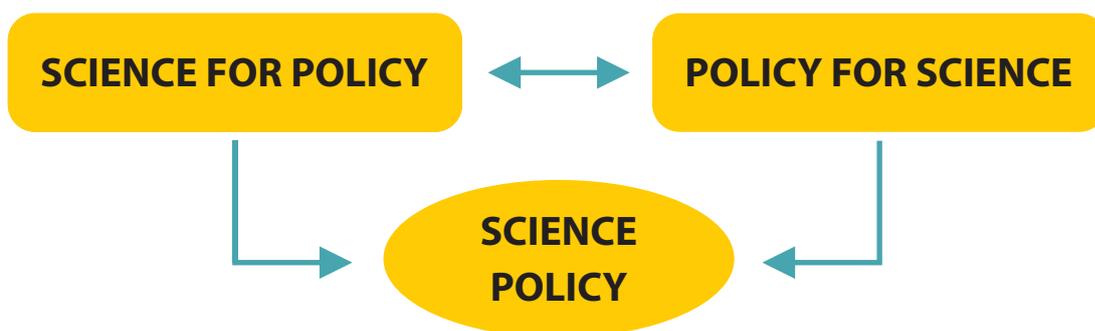
SCIENCE POLICY

Discussion topics: What is science & technology policy?

Science policy is divided into two actionable components that feed into each other. The first is 'science for policy' wherein outcomes from science and technology are used in evidence-based policymaking. The second actionable component is 'policy for science' wherein government plans for science and technology outcomes such that they align with national priorities.

Networking, Opening Remarks, Brainstorming
Share Thematic Challenges in S&T

↓

Roundtable Discussion
Identify Opportunities & Solutions - Science Policy

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Convergent Discussion
Conceptualize Institutional Mechanisms for Science Policy Dialogue

S&T challenges

The key challenges in S&T were identified as
- Difficulties in conducting data-informed science
- "language" barriers between scientists and non-scientists
- Varied outcomes from science policy implementation
- Limited workforce in cutting-edge S&T
- Navigating intellectual property rights and country-specific regulations. S&T policy solutions for each of the key challenges were explored.

Additionally, across the diverse G20 countries, S&T policy dialogues provide an opportunity to address S&T workforce mobility, equitable access to research, and shared infrastructure for S&T.

S&T policy solutions
- Uniform policies for classification, quality & standardization, compatibility, and security across G20 member countries.
- Cross-sector programs to promote science communication and science policy awareness.
- Development and adoption of a shared framework for governance of science policy implementation.
- Policy guidelines for research mobility and capacity building specifically within cutting-edge S&T areas of interest to G20 member countries.
- Clearly defined channels for navigating intellectual property rights and country-specific regulations across the G20 countries

The four-hour long brainstorming discussion resulted in suggestions and recommendations related to data governance framework, science communication, governance and evaluation of science policy implementation, capacity building, sharing of resources and technology in the themes - quantum technology and urban mobility.

The participants were from IBM Quantum, Tata Consultancy Services, Urban Morph, Beltech AI, buymyEV®, Namma Yatri, Christ University, Bangalore DST Centre for Policy Research - IISc Bangalore Swissnex in India Consulate General of Switzerland Fraunhofer Office India Capgemini QET Council of India (Quantum Ecosystems and Technology Council of India , National Institute of Advanced Studies @Consulate General of Germany , Consulate General of the kingdom of Netherlands , Consulate General of Israel, Consulate General of France.

First VC , R&D funding received

Mr. Venkatesh Krishnan (VC) and his team visited BeST cluster office while interacting with Prof Monto Mani's regarding his innovation - the robotic obstacle remover - which aims to replace manual scavenging. Mr. Krishnan has funded this project to develop a fully functional prototype.

The "man to manhole" problem, a term used to describe hazardous and challenging work conditions in underground utility maintenance, has long plagued urban centers worldwide. Sewer systems, storm drains, and underground utility tunnels often require human workers to carry out inspections, maintenance, and repairs in tight and dangerous spaces. This poses significant risks to workers' safety and well-being, making it a pressing issue in need of an innovative solution.

Robotic Scavenger aims to solve this pressing problem. This robotic system is designed to navigate through the narrow and complex underground infrastructure, autonomously performing various maintenance tasks without the need for human intervention.

The second periodical One Health Meeting
19th July 2023

The second periodical meeting of the One Health Bengaluru City Consortium (OHBC) was led by Dr. Farah Ishtiaq and covered various critical topics. Dr. Farah Ishtiaq, Dr. Uma Ramakrishnan, Mr. Ajay Raghavan, and Dr. Bhaskar Rajakumar actively participated in the recent Project Monitoring & Review Committee (PRMC) meeting for the BeST cluster. Updates on the progress of obtaining approval for a BBMP One Health cell and the implementation of SARS COV-2 wastewater surveillance were shared during the meeting. OHBC also initiated efforts for surveillance of other pathogens and antimicrobial resistance-CAMP announced an upcoming innovation challenge, inviting consortium members to participate and coordinate activities for its execution.

During the meeting, Yuvaraj presented essential data for modeling purposes, including updates on urbanization index, temperature, piped water supply, land use land cover, and BBMP wards. Ajay shared updates on the "Dengue free ward" initiative, which received appreciation from the Public Service Authority (PSA). Shannon provided updates on various projects related to One Health, including the development of a searchable database and information mapping for dengue.

The meeting concluded with several action items:
* The BeST cluster team will seek geospatial data from ISRO and weather data from the local weather station.
* A Google form will be circulated to collect ideas for outreach programs, with a mechanism for selecting and funding chosen ideas.
* Consortium members are encouraged to submit proposals, preferably collaborative ones, aligned with the National One Health Mission to explore CSR funding opportunities.
* The group will stay updated on the innovation challenge from CCAMP.

Overall, the meeting served as a productive platform for collaboration, knowledge sharing, and the development of strategic plans to promote One Health initiatives in Bengaluru City.

BeST participated at the
Oral Cancer Taskforce Meeting supported by Biocon Foundation

The BeST cluster presented breakthrough ideas on digital health at the Oral Cancer Taskforce Meeting supported by Biocon Foundation. The Chief guests were Dr. Rath (Head – National Cancer Institute, India), Dr. Kiran Mazumdar Shaw (Founder and Managing Trustee, Biocon Foundation), and Dr. Govindan Rangarajan (Director, IISC).

Reaching out to the investors for R&D funding

Lab visit to Prof. Sebastian Chirambatte Peter, JNCASR with Schneider electric to explore possibilities of industry-academia collaboration in green hydrogen space.